Note remarks

Test sheet : MB 2,5 C1 Edition : 17.02.89

Replaces Test oil : ISO-4113

: 0 400 075 958 Combination no.

Injection pump

Pump designation : PES5M55C32ORS158-1

EP type number : 0 410 055 979

Governor

Governor design. : RSF340/2300M64-3 : 0 420 021 101 Governer no.

Customer-spec. information

Customer : DAIMLER-BENZ

: DM602A Engine

: 92.0 1st version kW Rated speed : 4600

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 469 990 351

Inlet press., bar: 1.00

Test nozzle holder

: D 681 343 009 assembly

Opening

pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter x Wall thickness

x Length mm : 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

: 2.20...2.30 Prestroke mm : (2.15...2.35)

Rack travel in mm : 20.00...22.00

A01

: 1- 2- 4- 5- 3 Firing order

: 0-72-144-216-288 Phasing

Tolerance + - 0 : 0.00 (1.00)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1000

Rack travel in mm : 13.90...14.00

Del.quantity cm3/: 5.1...5.2

100 s: (5.0...5.3)

cm3 : 0.2Spread

100 s: (0.3)

2nd speed rpm : 315.0
Rack travel in mm : 5.4...5.6
Del.quantity cm3/ : 0.5...0.6

100 s: (0.4...0.9)

cm3 : 0.1Spread

100 s: (0.1)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1000 Speed Aneroid pressure h: 1850

Del.quantity

: 51.0...52.0 1000 : (50.0...53.0) cm3 : 2.50 1000 : (3.00)

Spread

RATED SPEED

1st version

Control lever

position degrees: 50...0 3rd rack travel in: 8,1...8,5 Speed rpm : 2500

4th rack travel in: 2950

Speed rpm : 0.00...1.00

SET IDLE CONTROL LEVER

POSITION

: 1000 rpm Rack travel in mm: 1,7...1,8

LOW IDLE 1

Control lever

position degrees: 8...12

Setting point w/out bumper spring Speed rpm : 315 Rack travel in mm : 5.5 Testing: Speed rpm : 220 Minimum rack trave: 8.00 Speed rpm : 315 Rack travel in mm : 5.405.60 Rack travel in mm : 2.50 Speed rpm : 540640 Speed rpm : 1000	Spread cm3 : 2.50 1000 s: (3.00) Aneroid pressure h: 050 Speed rpm : 1000 Del.quantity cm3/: 33.034.0 1000 s: (32.035.0) Spread cm3 : 2.50 1000 s: (3.00) STARTING FUEL DELIVERY
Maximum rack trave: 1.80 SET IDLE AUXILIARY SPRING Speed rpm : 380 Rack travel in mm : 4,204,40 : (4,104,50)	Speed rpm : 100 Del.quantity cm3/ : 52.00.0 1000 s: (52.00.0) Rack travel in mm : 20.100.00 HIGH IDLE
TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1000 Rack travel in m: 13.9014.00 2nd speed rpm : 1600 Rack travel in m: 13.2013.40 3rd speed rpm : 2200 Rack travel in m: 12.3012.50	1st version Aneroid pressure h: 1850 Speed rpm : 2500 Rack travel in mm : 8.108.50 Del.quantity cm3/: 29.033.0 1000 s: (28.034.0) Spread cm3 : 2.50 1000 s: (3.00)
Aneroid/Altitude Compensator Test	LOW IDLE
1st version Setting Speed rpm : 1000 Pressure hPa : 1600 Rack travel mm : 0.500.90	Speed rpm : 315 Rack travel in mm : 5.405.60 Del.quantity cm3/: 5.56.5 1000 s: (4.59.0) Spread cm3 : 1.00 1000 s: (1.50)
Measurement Speed 1/min: 1000	SETTING/TESTING ELECTRONIC IDLE REGULATION (ELR)
1st pressure hPa : 1050 Rack travel in m: 3.904.10 2nd pressure hPa : 750 Rack travel in m: 5.806.20 FUEL DELIVERY CHARACTERISTICS 1st version	Control lever at idle stop Speed rpm : 340 Rack travel in mm : (12,413,8) Del.quantity cm3/: - 1000 s: (41,049,0) Current A : 1,8 Control lever at full-load stop Speed rpm : 2950 Rack travel in mm : 0,01,0
Aneroid pressure h: 1850 Speed rpm : 1600 Del.quantity cm3/ : 50.051.5 1000 s: (49.052.5) Spread cm3 : 2.50 1000 s: (3.) Aneroid pressure h: 1850 Speed rpm : 2200 Del.quantity cm3/ : 48.550.5 1000 s: (47.551.5)	Current short-duration A: 3,0 Starting test Speed rpm: 100 Del.quantity cm3/: - min. 1000 s: 52,0 Remarks:

Pin projection = 16.60...16.70 mm

CORRECTION OF INJECTED-FUEL QUANTITY -Set max. change plus/minus 0.75 mm control-rod travel at correction screw on ALDA pressure box.

CHECKING THE IDLE—SPEED AUXILIARY SPRING CUTOFF
—Control—lever position 49°, max.
0.2 mm control—rod travel deduction allowable after switchover point (of starting cam) up to 1000 1/min.
Control—lever position 46.5°, control—rod travel deduction must be greater than 0.2 mm after switchover point (of starting cam).

TESTING PNEUMATIC SHUTOFF DEVICE
-Control lever at idle stop.
With n = 315 1/min. and pu = 450 mbar,
control rod must move quickly to
control-rod travel = 0 mm

Start-of-delivery sensor system: adjustment and blocking with device KDEP 1077 = 19.3°...19.7° (19.2...19.8°) angular displacement of cam following start of delivery of cylinder no. 1. Difference in start of delivery between max. and min. value = max. 1° angular displacement of cam

Note remarks

: MB 2,5 F6 : 17.02.89 Test sheet Edition : 02.06.87 Replaces Test oil : ISO-4113

: 0 400 075 959 Combination no.

Injection pump

Pump designation : PES5M55C32ORS166 EP type number : 0 410 055 980

Governor

Governor design. : RSF340/2300M64-1

: 0 420 021 050 Governer no.

Customer-spec. information Customer : DB-PKW

: 0M602A Engine

1st version kW : 92.0

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 469 990 351

Inlet press., bar: 1.00

Test nozzle holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

: 1.70...1.80 Prestroke mm

: (1.65...1.85)

Rack travel in mm : 20.00...22.00 Firing order : 1-2-4-5-3

: 0-72-144-216-288 Phasing

Tolerance + - ° : 0.00 (1.00)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 14.00...14.10

Del.quantity cm3/: 5.1...5.2

100 s: (5.0...5.3)

cm3 : 0.2Spread

100 s: (0.3)

rpm : 315.0 2nd speed Rack travel in mm: 4.9...5.1

Del.quantity cm3/: 0.5...0.6 100 s: (0.4...0.8)

cm3 : 0.1Spread

100 s: (0.1)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 1850

Del.quantity : 51.0...52.0 1000 : (50.0...53.0)

cm3 : 2.50 Spread

1000 : (3.00)

RATED SPEED

1st version Control lever

position degrees: 50...0

3rd rack travel in: 8,10...8,50 Speed rpm : 2500 4th rack travel in: 2950

: 0.00...1.00 Speed rpm

SET IDLE CONTROL LEVER

POSITION

rom

Rack travel in mm : 1,7...1,8

LOW IDLE 1

Control lever

position degrees: 8...12

Setting point w/out bumper spring

A04

Speed rpm: 315 Rack travel in mm: 5.0 Testing: Speed rpm: 220 Minimum rack trave: 8.00 Speed rpm: 315 Rack travel in mm: 4.905.10 Rack travel in mm: 2.50 Speed rpm: 525625 Speed rpm: 1000 Maximum rack trave: 1.80	Spread cm3 : 2.50 1000 s: (3.00) Aneroid pressure h: 1050 Speed rpm : 1000 Del.quantity cm3/ : 33.034.0 1000 s: (32.035.0) Spread cm3 : 2.50 1000 s: (3.00) STARTING FUEL DELIVERY
SET IDLE AUXILIARY SPRING Speed rpm : 380 Rack travel in mm : 4,204,40 : (4,104,50)	Speed rpm : 100 Del.quantity cm3/ : 52.00.0 1000 s: (52.00.0) Rack travel in mm : 20.100.00
TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1000 Rack travel in m: 14.0014.10 2nd speed rpm : 1600 Rack travel in m: 13.3013.50 3rd speed rpm : 2200 Rack travel in m: 12.8013.00 Aneroid/Altitude Compensator Test	HIGH IDLE 1st version Aneroid pressure h: 1850 Speed rpm : 2500 Rack travel in mm : 8.108.50 Del.quantity cm3/ : 31.035.0 1000 s: (30.036.0) Spread cm3 : 2.50 1000 s: (3.00) LOW IDLE
1st version Setting Speed rpm : 1000 Pressure hPa : 1600 Rack travel mm : 0.500.90 Measurement	Speed rpm : 315 Rack travel in mm : 4.905.10 Del.quantity cm3/ : 5.06.0 1000 s: (4.08.5) Spread cm3 : 1.00 1000 s: (1.50)
Speed 1/min: 1000 1st pressure hPa: 1050 Rack travel in m: 3.904.10 2nd pressure hPa: 750 Rack travel in m: 5.806.20 FUEL DELIVERY CHARACTERISTICS	SETTING/TESTING ELECTRONIC IDLE REGULATION (ELR) Control lever at idle stop Speed rpm : 340 Rack travel in mm : (12,413,8) Del.quantity cm3/:- 1000 s: (41,049,0) Current A : 1,8
1st version Aneroid pressure h: 1850 Speed rpm : 1600 Del.quantity cm3/: 50.051.5	Control lever at full-load stop Speed rpm: 2950 Rack travel in mm: 0,01,0 Current short-duration A: 3,0 Starting test Speed rpm: 100 Del.quantity cm3/:- min. 1000 s: 52,0 Remarks: Pin projection = 16.6016.70 mm

3.310 V must be attained.

CORRECTION OF INJECTED-FUEL QUANTITY
-Set max. change plus/minus 0.75 mm
control-rod travel at correction
screw on ALDA pressure box.

CHECKING THE IDLE—SPEED AUXILIARY SPRING CUTOFF

-Control—lever position 49°, max.

0.2 mm control—rod travel deduction allowable after switchover point (of starting cam) up to 1000 1/min.

Control—lever position 46.5°, control—rod travel deduction must be greater than 0.2 mm after switchover point (of starting cam).

Start-of-delivery sensor system: adjustment and blocking with device KDEP 1077 = 19.3°...19.7° (19.2...19.8°) angular displacement of cam following start of delivery of cylinder no. 1. Difference in start of delivery between max. and min. value = max. 1° angular displacement of cam

TESTING PNEUMATIC SHUTOFF DEVICE
-Control lever at idle stop.
With n = 315 1/min. and pu = 450 mbar,
control rod must move quickly to
control-rod travel = 0 mm

Testing and adjusting the control-rod-travel sensor with evaluation circuit R2.1.3

Receiving inspection
Shift control lever to full-load stop. Set 13.5 V at stabilizer. Apply 1850 hPa to ALDA. Run up to speed of 1000 1/min; a voltage of 3.230...3.310 (3.190...3.350) V must be displayed on the digital voltmeter.

Adjustment of the control-rod travel sensor

At a speed of 1000 1/min, set fuel delivery at 23.0...24.0 (22.0...25.0) ccm/1000 strokes with control lever. Shift control-rod-travel sensor until U = 2.095...2.105 (2.098...2.102) V is indicated. Tighten fastening screws with 1...2 Nm. Control lever to full-load stop; voltage value of 3.230...

Note remarks

Test sheet Edition : MB 2,5 F : 17.02.89 : 30.03.87 Replaces Test oil : ISO-4113

: 0 400 075 961 Combination no.

Injection pump

Pump designation : PES5M55C32ORS153 EP type number : 0 410 055 991

Governor

Governor design: RSF350/2300M67 : 0 420 021 094 Governer no.

Customer-spec. information Customer : DR

: 0M602 Engine

1st version kW : 66.0

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 469 990 351

Inlet press., bar: 1.00

Test nozzle holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm

: 2.00...2.10 : (1.95...2.15)

Rack travel in mm : 20.00...22.00 Firing order : 1-2-4-5-Firing order

A07

: 0-72-144-216-288 Phasing

Tolerance $+ - \circ : 0.00 (1.00)$

Time to cyl. no. : 1

BASIC SETTING

rpm: 1000 1st speed

Rack travel in mm : 11.30...11.40

Del.guantity cm3/: 3.1...3.2

100 s: (3.0...3.3)

Spread cm3 : 0.2

100 s: (0.3)

rpm : 350.02nd speed Rack travel in mm : 5.7...5.9 Del.quantity cm3/: 0.5...0.6 100 s: (0.4...0.9)

cm3 : 0.1 Spread

100 s: (0.1)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Del.quantity : 31.5...32.5 1000 : (30.5...33.5)

: 2.50 Spread cm3 1000 : (3.00)

RATED SPEED

1st version

Control lever

position degrees: 50...0
3rd rack travel in: 7,90...8,30
Speed rpm : 2500

4th rack travel in: 2950

: 0.00...1.00 Speed rpm

SET IDLE CONTROL LEVER **POSITION**

rpm Rack travel in mm : 0,9...1,0

LOW IDLE 1

Control lever

position degrees: 13...17

Setting point w/out bumper spring

rpm Speed

Rack travel in mm : 5.8 LOW IDLE Testing: Speed rpm : 350 Rack travel in mm : 5.70...5.90 Del.quantity cm3/ : 5.0...6.0 1000 s: (4.5...9.0) Speed : 220 rpm Minimum rack trave: 10.00 : 350 rpm Rack travel in mm : 5.70...5.90 cm3 : 1.00Spread Rack travel in mm : 1.50 1000 s: (1.50) : 640...740 Speed rom Speed : 1000 SETTING PNUEUMATIC FAST IDLE rpm Maximum rack trave: 1.00 (ELA) SET IDLE AUXILIARY SPRING rpm : 400 : 400 Speed rpm Rack travel in mm : (5,7...7,3)
Del.quantity cm3/ : (6,0...14,0)
1000 s: -Rack travel in mm : 4,20...4,40 : (4,10...4,50) TORQUE CONTROL Vacuum hPa : 400 Torque control curve - 1st version rpm : 1000 1st speed Remarks: Rack travel in m: 11.30...11.40 : 1800 2nd speed rpm Rack travel in m: 10.80...11.00 Start-of-delivery sensor system: rpm : 2200 3rd speed adjustment and blocking with device KDEP $1077 = 19.3^{\circ} \dots 19.7^{\circ}$ Rack travel in m: 10.50...10.70 (19.2...19.8°) angular displacement of cam following start of delivery of cylinder no. 1. FUEL DELIVERY CHARACTERISTICS Difference in start of delivery between 1st version max. and min. value = max. 1° angular Speed rpm : 1800 Del.quantity cm3/ : 34.0...35.5 displacement of cam 1000 s: (33.0...36.5) CHECKING THE IDLE-SPEED AUXILIARY Spread : 2.50 SPRING CUTOFF cm3 1000 s: (3.) -Control-lever position 49°, max. : 2200 0.2 mm control-rod travel deduction Speed rom Del.quantity cm3/: 33.5...35.5 allowable after switchover point (of starting cam) up to 1000 1/min. 1000 s: (32.5...36.5) : 2.50 Control-Lever position 46.5°, Spread cm31000 s: (3.00) control-rod travel deduction must be greater than 0.2 mm after switchover point (of starting cam). STARTING FUEL DELIVERY CHECKING THE PNEUMATIC SHUTOFF BOX Speed : 100 -Control lever up against idle stop. rpm Del.quantity cm3/: 55.0...0.0 At n = 350 1/min and pu = 450 mbar 1000 s: (55.0...0.0) control rod must move briskly to Rack travel in mm : 20.10...0.00 control-rod travel = 0 mm HIGH IDLE 1st version ADJUSTMENT OF ACTIVE BUCKING DAMPING (ARD) : 2500 Control lever on full-load stop. At n = 1000 min. Speed man Rack travel in mm : 7.90...8.30 I = 2.5 A, difference in delivery referenced to Del.quantity cm3/: 22.0...26.0 1000 s: (21.0...27.0) delivery (8.8...10.8) ccm/1000 strokes. : 2.50 Spread cm3 1000 s: (3.00)

80A

ad

Note remarks

: MB 2,5 F8 : 17.02.89 Test sheet Edition : 26.08.87 Replaces Test oil : ISO-4113

: 0 400 075 974 Combination no.

Injection pump

Pump designation : PES5M55C32ORS162 : 0 410 055 983 EP type number

Governor

Governor design. : RSF340/2300M60-5 : 0 420 021 063 Governer no.

Customer-spec. information

Customer : DB

: 0M602-LVP MJ:86 Engine

1st version kW : 66.0

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 469 990 351

Inlet press., bar: 1.00

Test nozzle holder

: 0 681 343 009 assembly

Opening

: 172...175 pressure, bar

Test lines : 1 680 750 014

Outside diameter

x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

-1 BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 1.70...1.80

: (1.65...1.85)

Rack travel in mm : 20.00...22.00 Firing order : 1-2-4-5-

A09

ih.

0

: 0-72-144-216-288 Phasing

Tolerance + - ° : 0.00 (1.00)

Time to cyl. no. : 1

BASIC SETTING

rpm : 1000 1st speed

Rack travel in mm : 11.30...11.40

Del.quantity cm3/: 3.1...3.2

100 s: (3.0...3.3)

cm3 : 0.2Spread

100 s: (0.3)

rpm : 315.02nd speed Rack travel in mm : 5.2...5.4

Del.quantity cm3/: 0.5...0.6

100 s: (0.4...0.9) Spread

cm : 0.1 100 s: (0.1)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1000 Speed

: 31.0...32.0 Del.quantity 1000 : (30.0...33.0)

: 2.50 Spread cm3

1000 : (3.00)

RATED SPEED

1st version

Control lever

position degrees: 50...0

3rd rack travel in: 7,1...7,5 Speed rpm : 2500

4th rack travel in: 2950

: 0.00...1.00 Speed rpm

SET IDLE CONTROL LEVER

POSITION

: 1000 Speed rpm

Rack travel in mm: 1,9...2,0

LOW IDLE 1

Control lever

position degrees: 13...17 Setting point w/out bumper spring

Speed rpm

Rack travel in mm : 5.3	+ STARTING FUEL DELIVERY
Testing: Speed rpm : 220 Minimum rack trave: 7.50 Speed rpm : 315 Rack travel in mm : 5.205.40 Rack travel in mm : 2.50 Speed rpm : 530630 Speed rpm : 1000 Maximum rack trave: 2.00	Speed rpm: 100 Del.quantity cm3/: 55.00.0 1000 s: (55.00.0) Rack travel in mm: 20.100.00 HIGH IDLE 1st version Speed rpm: 2500
SET IDLE AUXILIARY SPRING Speed rpm : 380 Rack travel in mm : 3,904,10 : (3,804,20)	Rack travel in mm: 7.107.50 Del.quantity cm3/: 16.020.0 1000 s: (15.021.0) Spread cm3 : 2.50 1000 s: (3.00)
TORQUE CONTROL Torque control curve - 1st version 1st speed	LOW IDLE
Rack travel in m: 11.3011.40 2nd speed rpm : 1600 Rack travel in m: 10.9011.10 3rd speed rpm : 2250 Rack travel in m: 10.3010.50 Aneroid/Altitude	Speed rpm: 315 Rack travel in mm: 5.205.40 Del.quantity cm3/: 5.06.0 1000 s: (4.59.0) Spread cm3: 1.00 1000 s: (1.50)
Compensator Test	SETTING/TESTING ELECTRONIC IDLE REGULATION (ELR)
1st version Setting Speed rpm : 1000 Pressure hPa : 930 Rack travel mm : 0.100.50 Measurement Speed 1/min : 1000	Control lever at idle stop Speed rpm : 340 Rack travel in mm : (12,513,9) Del.quantity cm3/: - 1000 s: (33,041,0) Current A : 1,8 Control lever at full-load stop Speed rpm : 2950 Rack travel in mm : 0,01,0
1st pressure hPa : 840 Rack travel in m: 1.101.30 2nd pressure hPa : 700 Rack travel in m: 2.302.70 FUEL DELIVERY CHARACTERISTICS	Current short-duration A: 3,0 Starting test Speed rpm: 100 Del.quantity cm3/: - min. 1000 s: 55,0
	Remarks:
1st version Speed rpm : 1600 Del.quantity cm3/ : 34.035.5	Pin projection = 16.6016.70 mm
1000 s: (3.) Speed rpm : 2250 Del.quantity cm3/ : 32.034.0 1000 s: (31.035.0) Spread cm3 : 2.50 1000 s: (3.00)	CHECKING THE IDLE-SPEED AUXILIARY SPRING CUTOFF -Control-lever position 49°, max. 0.2 mm control-rod travel deduction allowable after switchover point (of starting cam) up to 1000 1/min. Control-lever position 46.5°, control-rod travel deduction must be

greater than 0.2 mm after switchover point (of starting cam).

TESTING PNEUMATIC SHUTOFF DEVICE
-Control lever at idle stop.
With n = 315 1/min. and pu = 450 mbar,
control rod must move quickly to
control-rod travel = 0 mm

Start-of-delivery sensor system: adjustment and blocking with device KDEP 1077 = 17.3°...17.7° (17.2...17.8°) angular displacement of cam following start of delivery of cylinder no. 1.

Difference in start of delivery between max. and min. value = max. 1° angular displacement of cam

Note remarks

: MB 2,5 H6 : 17.02.89 : 06.09.88 Test sheet Edition Replaces Test oil : ISO-4113

: 0 400 075 975 Combination no.

Injection pump

Pump designation : PES5M55C32ORS159 EP type number : 0 410 055 985

Governor

Governor design. : RSF350/2300M56-2 : 0 420 021 055 Governer no.

Customer-spec. information Customer : DB

: 0M602-LVP Engine

1st version kW : 66.0

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 469 990 351

Inlet press., bar: 1.00

Test nozzle holder

: 0 681 343 009 assembly

Opening

: 172...175 pressure, bar

Test lines : 1 680 750 014

Outside diameter x Wall thickness

x Length mm : 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

: 1.50...1.60 : (1.45...1.65) Prestroke mm

Rack travel in mm : 20.00...22.00 Firing order : 1-2-4-5-

3

Phasing : 0-72-144-216-288

Tolerance + - 0 : 0.00 (1.00)

Time to cyl. no. : 1

BASIC SETTING

rpm: 1000 1st speed

Rack travel in mm : 11.50...11.60

Del.quantity cm3/: 3.2...3.3

100 s: (3.1...3.4)

cm3 : 0.2 Spread

100 s: (0.3)

rpm : 350.0 2nd speed Rack travel in mm : 5.0...5.2 Del.quantity cm3/: 0.5...0.6

100 s: (0.4...0.9)

cm3 : 0.1 Spread 100 s: (0.1)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1000 Speed

: 32.0...33.0 Del quantity 1000 : (31.0...34.0)

Spread cm3 : 2.50 1000 : (3.00)

RATED SPEED

1st version

Control lever position degrees: 50...0 3rd rack travel in: 7,0...7,4 Speed rpm : 2500

4th rack travel in: 2950

: 0.00...1.00 Speed rom

SET IDLE CONTROL LEVER **POSITION**

: 1000 Speed rpm Rack travel in mm : 1,9...2,0

LOW IDLE 1

Control lever

position degrees: 13...17

Setting point w/out bumper spring

rpm : 350 Speed

A12

Rack travel in mm: 5.1 Testing: Speed : 220 rom Minimum rack trave: 10.00 : 350 rpm Rack travel in mm : 5.00...5.20 : 1000 rpm Maximum rack trave: 2.00 SET IDLE AUXILIARY SPRING rom : 400 Speed Rack travel in mm : 3,80...4,00 : (3,70...4,10) TORQUE CONTROL Torque control curve - 1st version : 1000 1st speed rom Rack travel in m: 11.50...11.60 : 1800 2nd speed rpm Rack travel in m: 11.00...11.20 3rd speed rpm : 2250 Rack travel in m: 10.60...10.80 Aneroid/Altitude Compensator Test 1st version Setting Speed : 1000 rpm hPa : 930 Pressure : 0.10...0.50 Rack travel mm Measurement Speed 1/min: 1000 1st pressure hPa : 840 Rack travel in m: 1.10...1.30 2nd pressure hPa : 700 Rack travel in m: 2.30...2.70 FUEL DELIVERY CHARACTERISTICS 1st version Speed : 1800 rpm Del.quantity cm3/: 35.0...36.5 1000 s: (34.0...37.5) cm3 : 2.50 Spread 1000 s: (3.) Speed rpm : 2250
Del.quantity cm3/: 33.0...35.0
1000 s: (32.0...36.0) cm3 : 2.50 Spread 1000 s: (3.00)

HIGH IDLE 1st version Speed rpm : 2500
Rack travel in mm : 7.00...7.40
Del.quantity cm3/ : 16.0...20.0
1000 s: (15.0...21.0)
Spread cm3 : 2.50 1000 s: (3.00) LOW IDLE Speed rpm : 350 Rack travel in mm : 5.00...5.20 Del.quantity cm3/: 5.0...6.0 1000 s: (4.5...9.0) cm3 : 1.00 Spread 1000 s: (1.50) SETTING PNUEUMATIC FAST IDLE (FLA) : 400 Speed rpm Rack travel in mm : (5,1...6,7) Del.quantity cm3/: -1000 s: (5,0...13,0) hPa : 400 Vacuum Remarks: Pin projection = 16.60...16.70 mm CHECKING THE IDLE-SPEED AUXILIARY SPRING CUTOFF -Control-lever position 49°, max.
0.2 mm control-rod travel deduction allowable after switchover point (of starting cam) up to 1000 1/min. Control-lever position 46.5°, control-rod travel deduction must be greater than 0.2 mm after switchover point (of starting cam).

CHECKING THE PNEUMATIC SHUTOFF BOX
-Control lever up against idle stop.
At n = 350 1/min and pu = 450 mbar
control rod must move briskly to
control-rod travel = 0 mm

STARTING FUEL DELIVERY

Start-of-delivery sensor system: adjustment and blocking with device KDEP 1077 = 18.3°...18.7° (18.2...18.8°) angular displacement of cam following start of delivery of cylinder no. 1.

Difference in start of delivery between max. and min. value = max. 1° angular displacement of cam

Note remarks

: MB 2,5 H7 : 17.02.89 Test sheet Edition : 22.04.88 Replaces Test oil : ISO-4113

Combination no. : 0 400 075 977

Injection pump

Pump designation : PES5M55C32ORS159 EP type number : 0 410 055 985

Governor

Governor design. : RSF340/2300M60-1 : 0 420 021 042 Governer no.

Customer-spec. information

Customer : DB

: 0M602-LVP Engine

1st version kW : 66.0

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 469 990 351

Inlet press., bar: 1.00

Test nozzle holder

: 0 681 343 009 assembly

Opening

: 172...175 pressure, bar

Test lines : 1 680 750 014

Outside diameter x Wall thickness

x Length mm : 6.00X2.00X600

(A) Injection pump setting values Insp. Values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

: 1.50...1.60 Prestroke mm

: (1.45...1.65)

Rack travel in mm : 20.00...22.00 Firing order : 1-2-4-5-3

: 0-72-144-216-288 Phasing

: 0.00 (1.00) Tolerance + - 0

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1000

Rack travel in mm : 11.50...11.60

Del.quantity cm3/: 3.2...3.3

100 s: (3.1...3.4)

cm3 : 0.2Spread

100 s: (0.3)

rpm : 315.0 2nd speed Rack travel in mm: 5.0...5.2 Del.quantity cm3/: 0.5...0.6

100 s: (0.4...0.9) cm3 : 0.1Spread

100 s: (0.1)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1000 Speed

: 32.0...33.0 Del.quantity 1000 : (31.0...34.0)

: 2.50 Spread cm3

1000 : (3.00)

RATED SPEED

1st version

Control lever position degrees: 50...0

3rd rack travel in: 7,0...7,4 Speed rpm : 2500

4th rack travel in: 2950

: 0.00...1.00 Speed rpm

SET IDLE CONTROL LEVER

POSITION

: 1000 Speed rpm Rack travel in mm: 1,9...2.0

LOW IDLE 1 Control lever

position degrees: 13...17
Setting point w/out bumper spring

rpm : 315 Speed

A15

Rack travel in mm: 5.1 Testina: Speed rpm : 220 Minimum rack trave: 7.50 Speed rpm : 315 Rack travel in mm : 5.00...5.20 HIGH IDLE : 1000 rom Maximum rack trave: 2.00 1st version : 2500 Speed rpm SET IDLE AUXILIARY SPRING Rack travel in mm : 7.00...7.40 Del.quantity cm3/: 16.0...20.0 1000 s: (15.0...21.0) : 380 rpm Rack travel in mm : 3,80...4,00 : 2.50 : (3,70...4,10)Spread cm3 1000 s: (3.00) TORQUE CONTROL Torque control curve - 1st version LOW IDLE : 1000 1st speed rpm Rack travel in m: 11.50...11.60 Speed rpm : 315 Rack travel in mm : 5.00...5.20 : 1800 rpm 2nd speed Rack travel in m: 11.00...11.20 Del.quantity cm3/: 5.0...6.0 : 2250 1000 s: (4.5...9.0) 3rd speed rpm Rack travel in m: 10.60...10.80 cm3 : 1.00Spread 1000 s: (1.50) Aneroid/Altitude Compensator Test SETTING/TESTING ELECTRONIC IDLE REGULATION (ELR) 1st version Control lever at idle stop Speed rpm : 340 Rack travel in mm : (12,5...13,9) Settina Speed : 1000 rpm Del.quantity cm3/: -1000 s: (32,0...40,0) hPa : 930 Pressure : 0.10...0.50 Rack travel mm : 1,8 Current A Control lever at full-load stop Measurement 1/min: 1000 : 2950 Speed rpm Rack travel in mm: 0,0...1,0 1st pressure hPa : 840 Current Rack travel in m: 1.10...1.30 short-duration A: 3,0 2nd pressure hPa : 700 Starting test Rack travel in m: 2.30...2.70 Speed : 100 rpm Del.quantity cm3/: - min. 1000 s: 52,0 FUEL DELIVERY CHARACTERISTICS Remarks: 1st version Speed : 1800 rpm Del.quantity cm3/: 35.0...36.5 1000 s: (34.0...37.5) Pin projection = 16.60...16.70 mm Spread cm3 : 2.501000 s: (3.) CHECKING THE IDLE-SPEED AUXILIARY : 2250 SPRING CUTOFF Speed rpm Del.quantity cm3/: 33.0...35.0 1000 s: (32.0...36.0) Spread cm3 : 2.50 -Control-lever position 49°, max.

0.2 mm control-rod travel deduction allowable after switchover point (of starting cam) up to 1000 1/min.

Control-lever position 46.5°, 1000 s: (3.00) control-rod travel deduction must be STARTING FUEL DELIVERY greater than 0.2 mm after switchover point (of starting cam).

Start-of-delivery sensor system: adjustment and blocking with device KDEP 1077 = 18.3°...18.7° (18.2...18.8°) angular displacement of cam following start of delivery of cylinder no. 1.

Difference in start of delivery between max. and min. value = max. 1° angular displacement of cam

TESTING PNEUMATIC SHUTOFF DEVICE
-Control lever at idle stop.
With n = 315 1/min. and pu = 450 mbar,
control rod must move quickly to
control-rod travel = 0 mm

Note remarks

Test sheet : MB 2,5 D : 08.03.89 Edition Replaces : 04.86 Test oil : ISO-4113

Combination no. : 0 400 075 979

Injection pump

Pump designation : PES5M55C32ORS153 : 0 410 055 991 EP type number

Governor

Governor design. : RSF340/2300M59-8 : 0 420 021 051 Governer no.

Customer-spec. information

Customer : DB

Engine : 0M602

: 66.0 1st version kW

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 469 990 351

Inlet press., bar: 1.00

Test nozzle holder

: 0 681 343 009 assembly

Openina |

: 172...175 pressure, bar

: 1 680 750 014 Test lines

Outside diameter x Wall thickness

x Length mm : 6.00X2.00X600

(A) Injection pump setting values Insp. Values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

: 2.00...2.10 Prestroke mm

: (1.95...2.15)

Rack travel in mm : 20.00...22.00 Firing order : 1-2-4-5-3 Phasing : 0-72-144-216-288

Tolerance + - 0 : 0.00 (1.00)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1000

Rack travel in mm : 11.30...11.40

Del.quantity cm3/: 3.1...3.2

100 s: (3.0...3.3)

Spread cm3 : 0.2

100 s: (0.3)

rpm : 315.02nd speed Rack travel in mm : 5.4...5.6 Del.quantity cm3/: 0.5...0.6

100 s: (0.4...0.9)

cm3 : 0.1Spread 100 s: (0.1)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

: 31.5...32.5 Del.quantity 1000 : (30.5...33.5)

cm3 : 2.50 Spread

1000 : (3.00)

RATED SPEED

1st version

Control Lever

position degrees: 50...0 3rd rack travel in: 7,8...8,2 Speed rpm : 2500

4th rack travel in: 2950

Speed rpm : 0,0...1,0

SET IDLE CONTROL LEVER **POSITION**

: 1000 Speed rpm Rack travel in mm: 0,9...1,0

LOW IDLE 1

Control lever

position degrees: 13...17

Setting point w/out bumper spring

Speed rpm : 315

A18

Rack travel in mm: 5.5 Testing: Speed : 220 rpm Minimum rack trave: 8.00 rpm : 380 Rack travel in mm : 4.20...4.40 Rack travel in mm: 1.50 : 630...730 Speed rom : 1000 Speed rom Maximum rack trave: 1.00 SET IDEE AUXILIARY SPRING : 380 rpm Rack travel in mm : 4,20...4,40 : (4,10...4,50) TORQUE CONTROL Torque control curve - 1st version st speed rpm : 1000 Rack travel in m: 11.30...11.40 nd speed rpm : 1800 Rack travel in m: 10.90...11.10 1st speed 2nd speed : 2200 3rd speed rpm Rack travel in m: 10.60...10.80 FUEL DELIVERY CHARACTERISTICS 1st version Speed rpm : 1800 Del.quantity cm3/: 34.0...35.5 1000 s: (33.0...36.5) Spread cm3 : 2.50 1000 s: (3.00) : 2200 Speed rpm Del.quantity cm3/: 33.5...35.5 1000 s: (32.5...36.5) Spread : 2.50 cm3 1000 s: 3.00 STARTING FUEL DELIVERY : 100 Speed rpm Del.quantity cm3/: -1000 s: 55,0 Rack travel in mm : 20.10...0.00 HIGH IDLE 1st version Speed rpm: 2500
Rack travel in mm: 7.80...8.20 Del.quantity cm3/: 22.0...26.0 1000 s: (21.0...27.0)

LOW IDLE

Speed rpm: 315 Rack travel in mm: 5.40...5.60 Del.quantity cm3/: 5.0...6.0 1000 s: (4.5...9.0) cm3 : 1.00 Spread 1000 s: (1.50)

SETTING/TESTING ELECTRONIC IDLE REGULATION (ELR)

Control lever at idle stop Speed rpm Rack travel in mm : (12,6...14,0) Del.quantity cm3/: -1000 s: (33,0...41,0) 1,8 Current A

Control lever at full-load stop : 2950 Speed rpm Rack travel in mm : 0,0...1,0

Current

Starting test Speed rpm : 100 Del.quantity cm3/: -min. 1000 s: 55,0

short-duration A: 3,0

Remarks:

CHECKING THE IDLE-SPEED AUXILIARY SPRING CUTOFF -Control-lever position 49°, max. 0.2 mm control-rod travel deduction allowable after switchover point (of starting cam) up to 1000 1/min. Control-lever position 46.50 control-rod travel deduction must be greater than 0.2 mm after switchover point (of starting cam).

TESTING PNEUMATIC SHUTOFF DEVICE -Control lever at idle stop. With n = 315 1/min. and pu = 450 mbar, control rod must move quickly to control-rod travel = 0 mm

Difference in start of delivery between max. and min. value = max. 10 angular displacement of cam

Start-of-delivery sensor system: adjustment and blocking with device KDEP 1077 = 19.3°...19.7° (19.2...19.8°) angular displacement of cam following start of delivery of cylinder no. 1.

Spread

cm3

: 2.50

1000 s: (3.00)

Note remarks

: MB 2,5 C : 17.02.89 Test sheet Edition : 04.86 Replaces : ISO-4113 Test oil

Combination no. : 0 400 075 980

Injection pump

Pump designation : PES5M55C32ORS158 : 0 410 055 986 EP type number

Governor

Governor design. : RSF340/2300M64-1

: 0 420 021 050 Governer no.

Customer-spec. information

Customer : DB

: 0M602A Engine

1st version kW : 92.0

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 469 990 351

Inlet press., bar: 1.00

Test nozzle holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

: 1 680 750 014 Test Lines

Outside diameter x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. Values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 2.20...2.30

: (2.15...2.35)

Rack travel in mm : 20.00...22.00

Firing order : 1-2-4-5-3 Phasing : 0-72-144-216-288

Tolerance + - 0 : 0.00 (1.00)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1000

Rack travel in mm : 13.90...14.00

Del.guantity cm3/: 5.1...5.2

100 s: (5.0...5.3)

cm3 : 0.2Spread

100 s: (0.3)

2nd speed rpm : 315.0 Rack travel in mm : 5.4...5.6

Del.quantity cm3/: 0.5...0.6 100 s: (0.4...0.9)

cm3 : 0.1Spread

100 s: (0.1)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000 Aneroid pressure h: 1850

Del.quantity : 51.0...52.0

1000 : (50.0...53.0)

: 2.50 Spread cm3

1000 : (3.00)

RATED SPEED

1st version

Control lever

position degrees: 50...0 3rd rack travel in: 8,1...8,5

: 2500 Speed rom 4th rack travel in: 2950

Speed _ rpm : 0.00...1.00

SET IDLE CONTROL LEVER

POSITION

rpm

Rack travel in mm: 1,7...1,8

LOW IDLE 1

Control Lever

position degrees: 8...12

Setting point w/out bumper spring

A20

Speed rpm: 315 Rack travel in mm: 5.5 Testing: Speed rpm: 220 Minimum rack trave: 8.00 Speed rpm: 315 Rack travel in mm: 5.405.60 Rack travel in mm: 2.50	Spread cm3: 2.50 1000 s: (3.00) Aneroid pressure h: 1050 Speed rpm: 1000 Del.quantity cm3/: 33.034.0 1000 s: (32.035.0) Spread cm3: 2.50 1000 s: (3.00)
Speed rpm : 540640 Speed rpm : 1000 Maximum rack trave: 1.80	STARTING FUEL DELIVERY
SET IDLE AUXILIARY SPRING Speed rpm : 380 Rack travel in mm : 4,24,4 : (4,14,5)	Speed rpm : 100 Del.quantity cm3/: 52.00.0 1000 s: (52.00.0) Rack travel in mm : 20.100.00
TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1000 Rack travel in m: 13.9014.00 2nd speed rpm : 1600 Rack travel in m: 13.2013.40 3rd speed rpm : 2200	HIGH IDLE 1st version Aneroid pressure h: 1850 Speed rpm : 2500 Rack travel in mm : 8.108.50 Del.quantity cm3/: 29.033.0
3rd speed rpm : 2200 Rack travel in m: 12.3012.50 Aneroid/Altitude Compensator Test	1000 s: (28.034.0) 1000 s: (28.034.0) 1000 s: (3.00) 1000 s: (3.00)
1st version Setting Speed rpm : 1000 Pressure hPa : 1600 Rack travel mm : 0.500.90	Speed rpm: 315 Rack travel in mm: 5.405.60 Del.quantity cm3/: 5.56.5 1000 s: (4.59.0) Spread cm3: 1.00 1000 s: (1.50)
Measurement Speed 1/min: 1000	SETTING/TESTING ELECTRONIC IDLE REGULATION (ELR)
1st pressure hPa : 1050 Rack travel in m: 3.904.10 2nd pressure hPa : 750 Rack travel in m: 5.806.20	Control lever at idle stop Speed rpm : 340 Rack travel in mm : (12,413,8 Del.quantity cm3/:-
FUEL DELIVERY CHARACTERISTICS	1000 s: (41,049,0) Current A : 1,8 Control lever at full-load stop
1st version Aneroid pressure h: 1850 Speed rpm : 1600 Del.quantity cm3/: 50.051.5	Speed rpm : 2950 Rack travel in mm : 0,01,0 Current short-duration A : 3,0 Starting test Speed rpm : 100 Del.quantity cm3/:- min. 1000 s: 52,0 Remarks: CHECKING THE IDLE-SPEED AUXILIARY

SPRING CUTOFF
-Control-lever position 49°, max.
0.2 mm control-rod travel deduction allowable after switchover point (of starting cam) up to 1000 1/min.
Control-lever position 46.5°, control-rod travel deduction must be greater than 0.2 mm after switchover point (of starting cam).

TESTING PNEUMATIC SHUTOFF DEVICE
-Control lever at idle stop.
With n = 315 1/min. and pu = 450 mbar,
control rod must move quickly to
control-rod travel = 0 mm

Difference in start of delivery between max. and min. value = max. 1° angular displacement of cam

Start-of-delivery sensor system: adjustment and blocking with device KDEP 1077 = 19.3°...19.7° (19.2...19.8°) angular displacement of cam following start of delivery of cylinder no. 1.

Testing and adjusting the control-rod-

travel sensor with evaluation circuit R2.1.3

R2.1.3

Receiving inspection
Shift control lever to full-load stop.
Set 13.5 V at stabilizer. Apply
1850 hPa to ALDA. Run up to speed of
1000 1/min; a voltage of 3.230...3.310
(3.190...3.350) V must be displayed
on the digital voltmeter.

Adjustment of the control-rod travel sensor

At a speed of 1000 1/min, set fuel delivery at 23.0...24.0 (22.0...25.0) ccm/1000 strokes with control lever. Shift control-rod-travel sensor until U = 2.095...2.105 (2.098...2.102) V is indicated. Tighten fastening screws with 1...2 Nm. Control lever to full-load stop; voltage value of 3.230... 3.310 V must be attained.

Pin projection = 16.60...16.70 mm

CORRECTION OF INJECTED-FUEL QUANTITY
-Set max. change plus/minus 0.75 mm
control-rod travel at correction

screw on ALDA pressure box.

Note remarks

: MB 2,5 E : 17.02.89 Test sheet Edition Replaces : 04.86 : ISO-4113 Test oil

: 0 400 075 982 Combination no.

Injection pump

Pump designation : PES5M55C32ORS153 EP type number : 0 410 055 991

Governor

Governor design: : RSF340/2300M59-4 Governer no. : 0 420 021 043

Customer-spec. information

Customer : DB

: 0M602 Engine

1st version kW : 66.0

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 469 990 351

Inlet press., bar: 1.00

Test nozzle holder

: 0 681 343 009 assembly

Opening.

: 172...175 pressure, bar

Test lines : 1 680 750 014

Outside diameter x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

: 2.00...2.10 Prestroke mm : (1.95...2.15) Rack travel in mm : 20.00...22.00

Firing order : 1-2-4-5-

A23

: 0-72-144-216-288 Phasina

Tolerance + - 0 : 0.00 (1.00)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1000

Rack travel in mm : 11.30...11.40

Del.quantity cm3/: 3.1...3.2

100 s: (3.0...3.3)

cm3 : 0.2Spread

100 s: (0.3)

2nd speed rpm : 315.0 Rack travel in mm : 5.4...5.6 Del.quantity cm3/: 0.5...0.6

100 s: (0.4...0.9)

cm3 : 0.1Spread 100 s: (0.1)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1000 Speed

: 31.5...32.5 : (30.5...33.5) Del.quantity 1000

: 2.50 Spread cm3

1000 : (3.00)

RATED SPEED

1st version

Control lever

position degrees: 50...0

3rd rack travel in: 7,8...8,2

Speed rpm : 2500

4th rack travel in: 2950

: 0.00...1.00 Speed rpm

SET IDLE CONTROL LEVER

POSITION

rom Rack travel in mm: 0,9...1,0

LOW IDLE 1

Control lever

position degrees: 13...17 Setting point w/out bumper spring

rpm : 315 Speed

Rack travel in mm: 5.5 Testing: Speed : 220 rpm Minimum rack trave: 8.00 Speed rpm Rack travel in mm: 5.40...5.60
Rack travel in mm: 1.50
Speed rpm: 630...730 Speed rpm : 1000 Maximum rack trave: 1.00 SET IDLE AUXILIARY SPRING : 380 rpm Rack travel in mm : 4,20...4,40 : (4,10...4,50) TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1000
Rack travel in m: 11.30...11.40
2nd speed rpm : 1800
Rack travel in m: 10.90...11.10
3rd speed rpm : 2200
Rack travel in m: 10.60...10.80 FUEL DELIVERY CHARACTERISTICS 1st version : 1800 Speed rpm Del.quantity cm3/: 34.0...35.5 1000 s: (33.0...36.5) cm3 : 2.50 Spread 1000 s: (3.00)

Speed rpm : 2200

Del.quantity cm3/: 33.5...35.5

1000 s: (32.5...36.5) : 2.50 Spread cm3 1000 s: (3.00) STARTING FUEL DELIVERY HIGH IDLE 1st version Speed rpm : 2500 Rack travel in mm : 7.80...8.20 Del.quantity cm3/: 22.0...26.0 1000 s: (21.0...27.0) cm3 : 2.50 1000 s: (3.00)

LOW TDLF Speed rpm : 315
Rack travel in mm : 5.40...5.60
Del.quantity cm3/ : 5.0...6.0
1000 s: (4.5...9.0)
Spread cm3 : 1.00
1000 s: (1.50) SETTING/TESTING ELECTRONIC IDLE REGULATION (ELR)

Control lever at idle stop rpm : 340 Rack travel in mm : (12,6...14,0) Del.quantity cm3/: -1000 s: (33,0...41,0) : 1,8 Current A Control lever at full-load stop Speed rpm : 2950

Rack travel in mm : 0,0...1,0 Current

short-duration A: 3,0 Starting test

Speed rpm : 100 Del.quantity cm3/: -min. 1000 s: 55,0

Remarks:

CHECKING THE IDLE-SPEED AUXILIARY SPRING CUTOFF -Control-lever position 49°, max.

0.2 mm control-rod travel deduction allowable after switchover point (of starting cam) up to 1000 1/min.

Control-lever position 46.5°, control-rod travel deduction must be greater than 0.2 mm after switchover point (of starting cam).

TESTING PNEUMATIC SHUTOFF DEVICE -Control lever at idle stop. With n = 315 1/min. and pu = 450 mbar, control rod must move quickly to control-rod travel = 0 mm

Difference in start of delivery between max. and min. value = max. 1° angular displacement of cam

Start-of-delivery sensor system: adjustment and blocking with device KDEP 1077 = 19.3°...19.7° (19.2...19.8°) angular displacement of cam following start of delivery of cylinder no. 1.

Spread

Note remarks

: MB 2,5 A : 17.02.89 Test sheet Edition Replaces : 12.85 Test oil : ISO-4113

Combination no. : 0 400 075 986

Injection pump

Pump designation : PES5M55C32ORS153 : 0 410 055 991 EP type number

Governor

Governor design. : RSF350/2300M55-3 : 0 420 021 041 Governer no.

Customer-spec. information : DB

Customer

Engine : 0M602

1st version kW : 66.0

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 469 990 351

Inlet press., bar: 1.00

Test nozzle holder

: 0 681 343 009 assembly

Opening

: 172...175 pressure, bar

Test lines : 1 680 750 014

Outside diameter x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

: 2.00...2.10 : (1.95...2.15) Prestroke mm

Rack travel in mm : 20.00...22.00

Firing order : 1- 2- 4- 5- 3 Phasina : 0-72-144-216-288

Tolerance + - 0 : 0.00 (1.00)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1000

Rack travel in mm : 11.30...11.40

Del.quantity cm3/: 3.1...3.2

100 s: (3.0...3.3)

cm3 : 0.2Spread

100 s: (0.3)

2nd speed rpm : 350.0 Rack travel in mm : 5.4...5.6 Del.quantity cm3/ : 0.5...0.6 100 s: (0.4...0.9)

cm3 : 0.1Spread 100 s: (0.1)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Del.quantity : 31.3...3.5)

: 2.50 Spread cm3

1000 : (3.00)

RATED SPEED

1st version

Control lever

position degrees: 50...0 3rd rack travel in: 7,8...8,2 Speed rpm : 2500

4th rack travel in: 2950

: 0.00...1.00 Speed rpm

SET IDLE CONTROL LEVER

POSITION

rpm

Rack travel in mm : 0,9...1,0

LOW IDLE 1

Control lever

position degrees: 13...17

Setting point w/out bumper spring

Speed rpm : 350

Rack travel in mm: 5.5 Testing: Speed : 220 rpm Minimum rack trave: 10.00 Speed : 350 rpm Rack travel in mm: 5.40...5.60 Rack travel in mm: 1.50 Speed : 640...740 rom Speed : 1000 rpm Maximum rack trave: 1.00 SET IDLE AUXILIARY SPRING : 400 rpm Rack travel in mm : 4,20...4,40 : (4,10...4,50) TORQUE CONTROL Torque control curve - 1st version st speed rpm : 1000 Rack travel in m: 11.30...11.40 1st speed nd speed rpm : 1800 Rack travel in m: 10.90...11.10 2nd speed rpm : 2200 3rd speed Rack travel in m: 10.60...10.80 FUEL DELIVERY CHARACTERISTICS 1st version Speed rpm : 1800 Del.quantity cm3/ : 34.0...35.5 1000 s: (33.0...36.5) Spread cm3 : 2.50 1000 s: (3.00) Speed rpm : 2200 Del.quantity cm3/ : 33.5...35.5 1000 s: (32.5...36.5) cm3 : 2.50 Spread 1000 s: (3.00) STARTING FUEL DELIVERY : 100 Speed rpm Del.quantity cm3/: 55.0...0.0 1000 s: (55.0...0.0) Rack travel in mm : 20.10...0.00 HIGH IDLE 1st version Speed rpm: 2500
Rack travel in mm: 7.80...8.20 Del.quantity cm3/: 22.0...26.0 1000 s: (21.0...27.0)

cm3 : 2.50

1000 s: (3.00)

LOW IDLE

Speed rpm : 350
Rack travel in mm : 5.40...5.60
Del.quantity cm3/: 5.0...6.0
1000 s: (4.5...9.0)
Spread cm3 : 1.00

1000 s: (1.50)

SETTING PNUEUMATIC FAST IDLE

: 400 rom Rack travel in mm : (5,2...6,8) Del.quantity cm3/: -1000 s: (5,0...13,0)

hPa : 400 Vacuum

Remarks:

CHECKING THE IDLE-SPEED AUXILIARY SPRING CUTOFF -Control-lever position 49°, max. 0.2 mm control-rod travel deduction allowable after switchover point (of starting cam) up to 1000 1/min. Control-lever position 46.5°, control-rod travel deduction must be greater than 0.2 mm after switchover point (of starting cam).

CHECKING THE PNEUMATIC SHUTOFF BOX -Control lever up against idle stop. At n = 350 1/min and pu = 450 mbar control rod must move briskly to control-rod travel = 0 mm

Start-of-delivery sensor system: adjustment and blocking with device KDEP 1077 = 19.3°...19.7° (19.2...19.8°) angular displacement of cam following start of delivery of cylinder no. 1. Difference in start of delivery between max. and min. value = max. 1° angular displacement of cam

Spread

Note remarks

: MB 3,0 01 : 17.02.89 Test sheet Edition Replaces : 12.85 : ISO-4113 Test oil

Combination no. : 0 400 075 991

Injection pump

Pump designation : PES5M55C32ORS108-1

EP type number : 0 410 055 992

Governor

Governor design. : RSF350/2300M15 : 0 420 021 014 Governer no.

Customer-spec. information

: DB Customer

: 0M617 (3.0 L) Engine

1st version kW : 65.0

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 012

Inlet press., bar: 1.00

Test nozzle holder

: 0 681 343 009 assembly

Openina

pressure, bar : 172...175

: 1 680 750 014 Test lines

Outside diameter x Wall thickness

x Length mm : 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 2.20...2.30

: (2.15...2.35)

Rack travel in mm : 20.00...0.00

Firing order : 1-2-4-5-3 Phasina : 0-72-144-216-288

Tolerance + - 0 : 0.50 (0.75)

BASIC SETTING

rpm: 1000 1st speed

Rack travel in mm : 13.40...13.50

Del.guantity cm3/: 3.9...4.0

100 s: (3.8...4.1)

cm3 : 0.2Spread

100 s: (0.3)

2nd speed rpm : 350.0 Rack travel in mm : 6.0...6.2 Del.quantity cm3/: 0.6...0.7

100 s: (0.5...0.9)

cm3 : 0.1Spread

100 s: (0.1)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1000 Speed

: 39.0...40.0 Del.quantity 1000 : (38.0...41.0)

Spread cm3 : 2.50

1000 : (3.00)

RATED SPEED

1st version

Control Lever

position degrees: 50...0

Testing:

1st rack travel in: 9.00

rpm : 0...2500 Speed

4th rack travel in: 2950

: 0.00...1.00 Speed man

SET IDLE CONTROL LEVER

POSITION

: 1000 Speed rpm

Rack travel in mm: 1,4...1,5

LOW IDLE 1 Control lever

position degrees: 9...13

Setting point w/out bumper spring

Speed rpm : 350

Rack travel in mm: 6.1 Testing: : 250 Speed rpm Minimum rack trave: 10.00 : 350 Speed rom Rack travel in mm: 6.00...6.20
Rack travel in mm: 2.00
Speed rpm: 720...820
Speed rpm: 300
Maximum rack trave: 9.50 SET IDLE AUXILIARY SPRING rpm : 450 Rack travel in mm : 4,60...4,80 : (4,50...4,90) TORQUE CONTROL Torque control curve - 1st version rpm : 1000 1st speed Rack travel in m: 13.40...13.50 rpm : 1800 2nd speed Rack travel in m: 13.00...13.20 3rd speed rpm : 2200 Rack travel in m: 12.50...12.70 FUEL DELIVERY CHARACTERISTICS 1st version : 1800 Speed rpm Del.quantity cm3/: 39.0...41.0 1000 s: (38.0...42.0) cm3 : 2.50Spread 1000 s: (3.00) : 2200 Speed rpm Del.quantity cm3/: 39.5...41.5 1000 s: (38.5...42.5) cm3 : 2.50 Spread 1000 s: (3.00) STARTING FUEL DELIVERY : 100 Speed rpm Del.quantity cm3/: 53.0...0.0 Rack travel in mm: 20.10...0.00 HIGH IDLE 1st version Speed : 2500 rpm Rack travel in mm : 8.60...9.00 Del.quantity cm3/: 23.0...27.0 1000 s: (22.0...28.0) cm3 : 2.50 Spread 1000 s: (3.00)

LOW IDLE

A28

Remarks:

CHECKING THE IDLE-SPEED AUXILIARY SPRING CUTOFF
-Control-lever position 47°. No change in control-rod travel after switchover point up to 550 1/min, control-lever position 30°. Speed range 350 1/min...450 1/min.

TESTING PNEUMATIC SHUTOFF DEVICE
-Control lever at idle stop.
With n = 375 1/min. and pu = 450 mbar,
control rod must move quickly to
control-rod travel = 0 mm

Note remarks

Test sheet : MB 3,0 W25 Edition : 17.02.89

Replaces

Test oil : ISO-4113

Combination no. : 0 400 076 967

Injection pump

Pump designation : PES6M55C32ORS171-1

EP type number : 0 410 056 987

Governor

Governor design. : RSF315/2300M60-8 : 0 420 021 114 Governer no.

Customer-spec. information Customer : DB-PKW

: 0M603-ECE Engine

1st version kW : 80.0

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 469 990 351

Inlet press., bar: 1.00

Test nozzle holder

: 0 681 343 009 assembly

Opening

: 172...175 pressure, bar

: 1 680 750 014 Test lines

Outside diameter x Wall thickness

x Length mm : 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 2.00...2.10

: (1.95...2.15)

Rack travel in mm : 20.00...22.00

Firing order : 1-5-3-6-2-4

B01

Phasing : 0-60-120-180-240-300

Tolerance + - * : 0.00 (1.00)

Time to cyl. no. : 1

BASIC SETTING

rpm: 1000 1st speed

Rack travel in mm : 12.50...12.60

Del.quantity cm3/: 3.1...3.2

100 s: (3.0...3.3)

cm3 : 0.2Spread

100 s: (0.3)

2nd speed rpm : 290.0 Rack travel in mm : 7.1...7.3 Del.quantity cm3/: 0.5...0.6

100 s: (0.5...0.9)

cm3 : 0.1Spread

100 s: (0.1)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000 Aneroid pressure h: 1100

: 31.0...32.0 Del.quantity

1000 : (30.0...33.0)

: 2.50 Spread cm3

1000 : (3.00)

RATED SPEED

1st version

Control lever

position degrees: 50...0

3rd rack travel in: 9,0...9,4
Speed rpm : 2500

4th rack travel in: 2950

: 0.00...1.00 Speed rpm

SET IDLE CONTROL LEVER

POSITION

rpm

Rack travel in mm : 1,7...1,8

LOW IDLE 1

Control Lever

position degrees: 12...16

Setting point w/out bumper spring

speed rpm : 290 Rack travel in mm : 7.2 cm3 : 2.50 1000 s: (3.00) Spread Testina: Speed STARTING FUEL DELIVERY rpm Minimum rack trave: 9.00 Speed rpm : 290
Rack travel in mm : 7.10...7.30
Rack travel in mm : 2.50 Speed rpm : 100
Del.quantity cm3/ : 52.0...0.0
1000 s: (52.0...0.0)
Rack travel in mm : 20.10...0.00 : 600...700 Speed rpm Speed rpm : 1000 Maximum rack trave: 1.80 HIGH IDLE SET IDLE AUXILIARY SPRING Speed rpm : 360 Rack travel in mm : 5,50...5,70 : (5,40...5,80) 1st version Aneroid pressure h: 1100 Speed rpm : 2500
Rack travel in mm : 9.00...9.40
Del.quantity cm3/ : 22.0...26.0
1000 s: (21.0...27.0)
Spread cm3 : 2.50
1000 s: (3.00) TORQUE CONTROL Torque control curve - 1st version : 1000 1st speed rpm Rack travel in m: 12.50...12.60 : 1400 2nd speed rpm Rack travel in m: 12.30...12.50 LOW IDLE rpm : 2200 3rd speed Rack travel in m: 11.90...12.10 Speed rpm Rack travel in mm: 7.10...7.30 Del.quantity cm3/: 5.5...6.5 1000 s: (5.0...9.5) Aneroid/Altitude Compensator Test cm3 : 1.00 Spread 1000 s: (1.50) 1st version Setting SETTING/TESTING ELECTRONIC IDLE Speed : 1000 REGULATION (ELR) rpm Pressure hPa : 950 : 0.00...0.20 Rack travel mm Control lever at idle stop rpm : 315 Rack travel in mun.

Del.quantity cm3/:
1000 s: (27,0...35,0)

: 1,8 Measurement 1/min: 1000 Speed 1st pressure hPa : 900 Rack travel in m: 0.50...0.70 2nd pressure hPa : 750 Control lever at full-load stop : 2950 Speed rpm Rack travel in m: 1.80...2.20 Rack travel in mm : 0,0...1,0 Current FUEL DELIVERY CHARACTERISTICS short-duration A: 3,0 Starting test Speed rpm Del.quantity cm3/: -min. 1000 s: 52,0 1st version Aneroid pressure h: 1100 Aneroid pressure n: 1100 Speed rpm: 1400 Del.quantity cm3/: 31.0...32.5 1000 s: (30.0...33.5) Spread cm3: 2.50 1000 s: (3.00) Remarks: Pin projection = 16.60...16.70 mm Aneroid pressure h: 1100 Speed rpm : 2200 CHECKING THE IDLE-SPEED AUXILIARY Del.quantity cm3/: 33.5...35.5 1000 s: (32.5...36.5) SPRING CUTOFF -Control-lever position 49°, max. 0.2 mm control-rod travel deduction allowable after switchover point (of starting cam) up to 1000 1/min. Control-lever position 46.5°, control-rod travel deduction must be greater than 0.2 mm after switchover point (of starting cam).

CHECKING THE PNEUMATIC SHUTOFF BOX
-Control lever up against idle stop.
At n = 290 1/min and pu = 450 mbar
control rod must move briskly to
control-rod travel = 0 mm

Start-of-delivery sensor system: adjustment and blocking with device KDEP 1077 = 19.3°...19.7° (19.2...19.8°) angular displacement of cam following start of delivery of cylinder no. 1.
Difference in start of delivery between max. and min. value = max. 1° angular displacement of cam

Note remarks

: MB 3,0 W26 : 17.02.89 Test sheet Edition

Replaces

: ISO-4113 Test oil

Combination no. : 0 400 076 969

Injection pump

Pump designation : PES6M55C32ORS174 : 0 410 056 988 EP type number

Governor

Governor design. : RSF315/2300M72-2 : 0 420 021 121 Governer no.

Customer-spec. information

Customer : DB

: OM603-Abgast. Engine

1st version kW : 76.0

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 469 990 351

Inlet press., bar: 1.00

Test nozzle holder

: 0 681 343 009 assembly

Openina |

pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

: 1.70...1.80 Prestroke mm

: (1.65...1.85)

Rack travel in mm : 20.00...22.00 Firing order : 1-5-3-6-Firing order

B04

: 0-60-120-180-240-300 Phasina

Tolerance + - 0 : 0.00 (1.00)

Time to cyl. no. : 1

BASIC SETTING

1st speed rom: 1000

Rack travel in mm : 12.40...12.50

Del.guantity cm3/: 3.1...3.2

100 s: (3.0...3.3)

cm3 : 0.2Spread

100 s: (0.3)

2nd speed rpm : 300.0 Rack travel in mm : 7.0...7.2 Del.quantity cm3/: 0.6...0.7

100 s: (0.6...1.0)

Spread cm3 : 0.1100 s: (0.1)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1000 Speed Aneroid pressure h: 1100

: 31.5...32.5 Del.quantity 1000 : (30.5...33.5)

: 2.50 cm3 Spread 1000 : (3.00)

RATED SPEED

1st version

Control Lever

position degrees: 50...0

3rd rack travel in: 9,1...9,5
Speed rpm : 2500

4th rack travel in: 2950

: 0.00...1.00 Speed rom

SET IDLE CONTROL LEVER

POSITION

: 1000 rpm Rack travel in mm : 1,4...1,5

LOW IDLE 1 Control Lever

position degrees: 12...16 Setting point w/out bumper spring

speed rpm : 300 Rack travel in mm : 7.1 cm3 : 2.50 1000 s: (3.00) Spread Testing: Speed rpm: 220
Minimum rack trave: 7.00
Speed rpm: 300
Rack travel in mm: 7.00...7.20
Rack travel in mm: 2.50
Speed rpm: 600...700 STARTING FUEL DELIVERY Speed rpm : 100
Del.quantity cm3/ : 52.0...0.0
1000 s: (52.0...0.0)
Rack travel in mm : 20.10...0.00 Speed : 1000 rpm Maximum rack trave: 1.50 HIGH IDLE SET IDLE AUXILIARY SPRING Speed rpm : 360 1st version Rack travel in mm : 5,30...5,50 Aneroid pressure h: 1100 rpm : 2500 : (5,20...5,60) Speed Rack travel in mm: 9.10...9.50
Del.quantity cm3/: 22.0...26.0
1000 s: (21.0...27.0)
Spread cm3: 2.50
1000 s: (3.00) TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1000 Rack travel in m: 12.40...12.50 : 1800 2nd speed rom Rack travel in m: 11.80...12.00 LOW IDLE rpm : 2200 3rd speed Rack travel in m: 11.50...11.70 Speed rpm : 300 Rack travel in mm : 7.00...7.20 Del.quantity cm3/: 6.5...7.5 1000 s: (6.0...10.5) Spread cm3 : 1.00 1000 s: (1.50) Aneroid/Altitude Compensator Test 1st version Setting SETTING/TESTING ELECTRONIC IDLE Speed : 1000 REGULATION (ELR) man hPa : 950 Pressure : 0.00...0.20 Rack travel mm Control lever at idle stop rpm : 315 Speed Measurement Speed 1/min : 1000 1st pressure hPa : 900 Rack travel in m: 0.50...0.70 2nd pressure hPa : 750 Control lever at full-load stop Speed rpm : 2950 Rack travel in m: 1.80...2.20 Rack travel in mm : 0,0...1,0 Current FUEL DELIVERY CHARACTERISTICS short-duration A: 3,0 Starting test Speed rpm Del.quantity cm3/: -min. 1000 s: 52,0 1st version Aneroid pressure h: 1100 Aneroid pressure n: 1100 Speed rpm: 1800 Del.quantity cm3/: 34.5...36.0 1000 s: (33.5...37.0) Spread cm3: 2.50 1000 s: (3.00) Remarks: Pin projection = 16.60...16.70 mm Aneroid pressure h: 1100 rpm : 2200 Speed CHECKING THE IDLE-SPEED AUXILIARY Del.quantity cm3/: 33.0...35.0 1000 s: (32.0...36.0) SPRING CUTOFF -Control-lever position 49°, max. 0.2 mm control-rod travel deduction allowable after switchover point (of starting cam) up to 1000 1/min. Control-lever position 46.5°, control-rod travel deduction must be greater than 0.2 mm after switchover point (of starting cam).

TESTING PNEUMATIC SHUTOFF DEVICE
-Control lever at idle stop.
With n = 300 1/min. and pu = 450 mbar,
control rod must move quickly to
control-rod travel = 0 mm

START-OF-DELIVERY ADJUSTMENT
-Start-of delivery adjustment and lock
after start-of-delivery mean value of
all cylinders, 16.3...16.7°
(16.2...16.8°) angular displacement of
the cam after cylinder 1.

Difference in start of delivery between max. and min. value = max. 1° angular displacement of cam

ADJUSTMENT OF ACTIVE BUCKING DAMPING (ARD) + Control lever on full-load stop. At n = 1000 min. -1, I = 2.5 A, difference in delivery referenced to full-load delivery (7.7...9.9) ccm/1000 strokes. +

Note remarks

: MB 3,0 W22 : 17.02.89 Test sheet Edition : 19.08.88 Replaces Test oil : ISO-4113

Combination no. : 0 400 076 970

Injection pump

Pump designation : PES6M55C32DRS174 EP type number : 0 410 056 988

Governor

Governor design. : RSF315/2300M60-21

: 0 420 021 122 Governer no.

Customer-spec. information

Customer

: OM603-Abgast. Engine

: 76.0 1st version kW

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 469 990 351

Inlet press., bar: 1.00

Test nozzle holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

: 1 680 750 014 Test lines

Outside diameter x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

: 1.70...1.80 Prestroke mm

: (1.65...1.85)

Rack travel in mm : 20.00...22.00

Firing order : 1-5-3-6-2-4

B07

: 0-60-120-180-240-300 Phasing

Tolerance + - 0 : 0.00 (1.00)

Time to cyl. no. : 1

BASIC SETTING

rpm: 1000 1st speed

Rack travel in mm : 12.40...12.50

Del.guantity cm3/: 3.1...3.2

100 s: (3.0...3.3)

Spread cm3 : 0.2

100 s: (0.3)

2nd speed rpm : 290.0 Rack travel in mm : 6.6...6.8 Del.quantity cm3/: 0.5...0.6

100 s: (0.5...0.9) cm3 : 0.1Spread

100 s: (0.1)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 1100
Del.quantity: 31.5...32.5
1000: (30.5...33.5)

cm3 : 2.50 Spread : (3.00) 1000

RATED SPEED

1st version

Control lever

position degrees: 50...0

3rd rack travel in: 9.1...9,5
Speed rpm: 2500

4th rack travel in: 2950

: 0.00...1.00 Speed rpm

SET IDLE CONTROL LEVER

POSITION

rpm

Rack travel in mm : 1,4...1,5

LOW IDLE 1 Control lever

position degrees: 12...16

Setting point w/out bumper spring

Speed cm3 : 2.50rpm Spread Rack travel in mm: 6.7 1000 s: (3.00) Testing: Speed rpm: 220
Minimum rack trave: 7.00
Speed rpm: 290
Rack travel in mm: 6.60...6.80
Rack travel in mm: 2.50
Speed rpm: 570...670 STARTING FUEL DELIVERY Speed rpm : 100
Del.quantity cm3/ : 52.0...0.0
1000 s: (52.0...0.0)
Rack travel in mm : 20.10...0.00 : 1000 Speed rpm Maximum rack trave: 1.50 HIGH IDLE SET IDLE AUXILIARY SPRING Speed rpm : 360 Rack travel in mm : 5,20...5,40 1st version Aneroid pressure h: 1100 : (5,10...5,50) : 2500 rpm Rack travel in mm : 9.10...9.50 Del.quantity cm3/: 22.0...26.0 1000 s: (21.0...27.0) Spread cm3 : 2.50 TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1000
Rack travel in m: 12.40...12.50
2nd speed rpm : 1800
Rack travel in m: 11.80...12.00
3rd speed rpm : 2200
Rack travel in m: 11.50...11.70 1000 s: (3.00) LOW IDLE : 290 Speed rpm Rack travel in mm : 6.60...6.80 Aneroid/Altitude Del.quantity cm3/: 5.5...6.5 1000 s: (5.0...9.5) Compensator Test cm3 : 1.00 Spread 1000 s: (1.50) 1st version Setting SETTING/TESTING ELECTRONIC IDLE Speed rpm : 1000 REGULATION (ELR) hPa : 950 Pressure : 0.00...0.20 Control lever at idle stop Rack travel mm Speed rpm Rack travel in mm : (12,8...14,2) Measurement Del.quantity cm3/: -1000 s: (28,0...36,0) 1/min: 1000 Speed 1st pressure hPa : 900 Current A Rack travel in m: 0.50...0.70 Control lever at full-load stop 2nd pressure hPa : 750 rpm Rack travel in m: 1.80...2.20 Rack travel in mm : 0,0...1,0 Current FUEL DELIVERY CHARACTERISTICS short-duration A: 3,0 Starting test rpm : 100 Del.quantity cm3/: -min. 1000 s: 52,0 1st version Aneroid pressure h: 1100 rpm : 1800 Speed rpm: 1800
Del.quantity cm3/: 34.5...36.0
1000 s: (33.5...37.0)
Spread cm3: 2.50
1000 s: (3.00)
Aneroid pressure h: 1100
Speed rpm: 2200
Del.quantity cm3/: 33.0...35.0 Remarks: Pin projection = 16.60...16.70 mm CHECKING THE IDLE-SPEED AUXILIARY SPRING CUTOFF 1000 s: (32.0...36.0) -Control-lever position 49°, max. 0.2 mm control-rod travel deduction allowable after switchover point (of starting cam) up to 1000 1/min. Control-lever position 46.5°, control-rod travel deduction must be greater than 0.2 mm after switchover point (of starting cam).

CHECKING THE PNEUMATIC SHUTOFF BOX
-Control lever up against idle stop.
At n = 290 1/min and pu = 450 mbar
control rod must move briskly to
control-rod travel = 0 mm

START-OF-DELIVERY ADJUSTMENT
-Start-of delivery adjustment and lock
after start-of-delivery mean value of
all cylinders, 16.3...16.7°
(16.2...16.8°) angular displacement of
the cam after cylinder 1.

Difference in start of delivery between max. and min. value = max. 1° angular displacement of cam

Note remarks

Test sheet : MB 3,0 W23 : 17.02.89 Edition : 05.08.88 Replaces Test oil : ISO-4113

Combination no. : 0 400 076 971

Injection pump

Pump designation : PES6M55C32ORS171 EP type number : 0 410 056 989

Governor

Governor design. : RSF315/2300M60-8 : 0 420 021 114 Governer no.

Customer-spec. information Customer : DB

Engine : OM603-ECE

1st version kW : 80.0

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 469 990 351

Inlet press., bar: 1.00

Test nozzle holder

: 0 681 343 009 assembly

Opening

: 172...175 pressure, bar

Test lines : 1 680 750 014

Outside diameter x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

: 2.00...2.10 Prestroke mm : (1.95...2.15)

Rack travel in mm : 20.00...22.00 Firing order : 1-5- 3- 6- 2-

B10

Phasing : 0-60-120-180-240-300

Tolerance + - 0 : 0.00 (1.00)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1000

Rack travel in mm : 12.50...12.60

Del.quantity cm3/: 3.1...3.2

100 s: (3.0...3.3)

cm3 : 0.2Spread

100 s: (0.3)

2nd speed rpm : 290.0
Rack travel in mm : 7.1...7.3
Del.quantity cm3/: 0.5...0.6
100 s: (0.5...0.9)
Spread cm3 : 0.1

100 s: (0.1)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000 Aneroid pressure h: 1100

Del.quantity : 31.0...32.0 1000 : (30.0...33.0)

: 2.50 Spread cm3

1000 : (3.00)

RATED SPEED

1st version

Control lever

position degrees: 50...0

3rd rack travel in: 9,0...9,4 Speed rpm : 2500

4th rack travel in: 2950

: 0.00...1.00 Speed rpm

SET IDLE CONTROL LEVER **POSITION**

rpm : 1000 Rack travel in mm: 1,7...1,8

LOW IDLE 1 Control lever

position degrees: 12...16

Setting point w/out bumper spring

Speed rpm : 290 Rack travel in mm : 7.2 Spread cm3 : 2.501000 s: (3.00) Testina: Speed rpm : 220 STARTING FUEL DELIVERY Minimum rack trave: 9.00 : 290 rpm Speed rpm : 100
Del.quantity cm3/ : 52.0...0.0
1000 s: (52.0...0.0)
Rack travel in mm : 20.10...0.00 Rack travel in mm : 7.10...7.30 Rack travel in mm : 2.50 Speed rpm: 600...700 Speed rpm: 1000 Maximum rack trave: 1.80 HIGH IDLE SET IDLE AUXILIARI 5.50...5,70 Rack travel in mm : 5,50...5,70 : (5,40...5,80) 1st version Aneroid pressure h: 1100 Speed rpm : 2500
Rack travel in mm : 9.00...9.40
Del.quantity cm3/ : 22.0...26.0 TORQUE CONTROL 1000 s: (21.0...27.0) Torque control curve - 1st version : 1000 cm3 : 2.50 1st speed rpm Spread 1000 s: (3.00) Rack travel in m: 12.50...12.60 2nd speed rpm : 1400 Rack travel in m: 12.30...12.50
3rd speed rpm : 2200
Rack travel in m: 11.90...12.10 LOW IDLE Speed rpm : 290
Rack travel in mm : 7.10...7.30
Del.quantity cm3/ : 5.5...6.5
1000 s: (5.0...9.5) Aneroid/Altitude Compensator Test cm3 : 1.00 Spread 1000 s: (1.50) 1st version Setting SETTING/TESTING ELECTRONIC IDLE : 1000 Speed rpm REGULATION (ELR) hPa : 950 Pressure Rack travel mm : 0.00...0.20 Control lever at idle stop rpm : 315 Speed Rack travel in mm : (12,5...13,9) Measurement Del.quantity cm3/: - 1000 s: (27,0...35,0) 1/min: 1000 Speed 1st pressure hPa : 900 Rack travel in m: 0.50...0.70 Current A : 1,8 Control lever at full-load stop 2nd pressure hPa : 750 : 2950 Speed rpm Rack travel in m: 1.80...2.20 Rack travel in mm : 0,0...1,0 Current short-duration A: 3,0 FUEL DELIVERY CHARACTERISTICS Starting test Speed rpm : 100 Del.quantity cm3/: -min. 1000 s: 52,0 1st version Aneroid pressure h: 1100 Speed rpm : 1400 Del.quantity cm3/: 31.0...32.5 1000 s: (30.0...33.5) Spread cm3 : 2.50 1000 s: (3.00) min. Remarks: Pin projection = 16.60...16.70 mmAneroid pressure h: 1100 : 2200 Speed CHECKING THE IDLE-SPEED AUXILIARY rpm Del.quantity cm3/: 33.5...35.5 1000 s: (32.5...36.5) SPRING CUTOFF -Control-lever position 49°, max. 0.2 mm control-rod travel deduction allowable after switchover point (of starting cam) up to 1000 1/min. Control-lever position 46.5°, control-rod travel deduction must be greater than 0.2 mm after switchover point (of starting cam).

CHECKING THE PNEUMATIC SHUTOFF BOX
-Control lever up against idle stop.
At n = 290 1/min and pu = 450 mbar
control rod must move briskly to
control-rod travel = 0 mm

Start-of-delivery sensor system: adjustment and blocking with device KDEP 1077 = 19.3°...19.7° (19.2...19.8°) angular displacement of cam following start of delivery of cylinder no. 1. Difference in start of delivery between max. and min. value = max. 1° angular displacement of cam

Note remarks

: MB 3,0 W24 : 17.02.89 Test sheet Edition : 19.08.88 Replaces : ISO-4113 Test oil

Combination no. : 0 400 076 972

Injection pump

Pump designation : PES6M55C32ORS171 : 0 410 056 989 EP type number

Governor

Governor design. : RSF315/2300M72-1 : 0 420 021 115 Governer no.

Customer-spec. information Customer

: OM603-ECE Engine

1st version kW : 80.0

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 469 990 351

Inlet press., bar: 1.00

Test nozzle holder

assembly : 0 681 343 009

Opening

pressure, bar : 172...175

Test Lines : 1 680 750 014

Outside diameter x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

: 2.00...2.10 Prestroke mm

: (1.95...2.15)

Rack travel in mm : 20.00...22.00

: 1-5-3-6-2-4 Firing order

Phasing : 0-60-120-180-240-300

Tolerance + - 0 : 0.00 (1.00)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 12.50...12.60

Del.quantity cm3/: 3.1...3.2

100 s: (3.0...3.3)

cm3 : 0.2Spread

100 s: (0.3)

2nd speed rpm : 300.0 Rack travel in mm : 7.3...7.5

Del.quantity cm3/: 0.6...0.7

100 s: (0.6...1.0)

cm3 : 0.1Spread

100 s: (0.1)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm: 1000 Aneroid pressure h: 1100 Del.quantity: 31.0...32.0

Aneroiu p. Del.quantity 1000

: (30.0...33.0)

Spread cm3 : 2.50

1000 : (3.00)

RATED SPEED

1st version

Control lever

position degrees: 50...0
3rd rack travel in: 9,0...9,4
Speed rpm : 2500

4th rack travel in: 2950

: 0.00...1.00 Speed rpm

SET IDLE CONTROL LEVER

POSITION

: 1000 Speed rpm

Rack travel in mm : 1,7...1,8

LOW IDLE 1

Control lever

position degrees: 12...16

Setting point w/out bumper spring

Speed rpm : 300 Rack travel in mm : 7.4 cm3 : 2.50Spread 1000 s: (3.00) Testing: rpm : 220 Speed STARTING FUEL DELIVERY Minimum rack trave: 9.00 Speed rpm: 300
Rack travel in mm: 7.30...7.50
Rack travel in mm: 2.50
Speed rpm: 620...720 Speed rpm: 1000 Maximum rack trave: 1.80 HIGH IDLE SET IDLE AUXILIARY SPRING rpm : 360 Speed 1st version Rack travel in mm : 5,80...6,00 : (5,70...6,10) Aneroid pressure h: 1100 rpm : 2500 Speed Rack travel in mm : 9.00...9.40
Del.quantity cm3/ : 22.0...26.0
1000 s: (21.0...27.0)
Spread cm3 : 2.50
1000 s: (3.00) TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1000
Rack travel in m: 12.50...12.60
2nd speed rpm : 1400
Rack travel in m: 12.30...12.50
3rd speed rpm : 2200 LOW IDLE Speed rpm : 300 Rack travel in mm : 7.30...7.50 Rack travel in m: 11.90...12.10 Del.quantity cm3/: 6.5...7.5 1000 s: (6.0...10.5) Aneroid/Altitude Compensator Test cm3 : 1.00 Spread 1000 s: (1.50) 1st version Setting SETTING/TESTING ELECTRONIC IDLE Speed rpm : 1000 REGULATION (ELR) Pressure hPa : 950 Rack travel mm : 0.00...0.20 Control lever at idle stop Speed rpm : 315 Rack travel in mm : (12,5...13,9 Measurement 1/min: 1000 Del.quantity cm3/: -1000 s: (27,0...35,0) Speed : 1,8 1st pressure hPa : 900 Current A Rack travel in m: 0.50...0.70 2nd pressure hPa : 750 Rack travel in m: 1.80...2.20 Control lever at full-load stop : 2950 Speed rpm Rack travel in mm : 0,0...1,0 Current FUEL DELIVERY CHARACTERISTICS short-duration A: 3,0 Starting test rpm : 100 Speed Del.quantity cm3/: -min. 1000 s: 52,0 1st version Aneroid pressure h: 1100 Speed rpm : 1400 Del.quantity cm3/: 31.0...32.5 1000 s: (30.0...33.5) Remarks: cm3 : 2.50 Pin projection = 16.60...16.70 mm Spread 1000 s: (3.00)
Aneroid pressure h: 1100
Speed rpm : 2200
Del.quantity cm3/: 33.5...35.5 CHECKING THE IDLE-SPEED AUXILIARY SPRING CUTOFF 1000 s: (32.5...36.5) -Control-lever position 49°, max. 0.2 mm control-rod travel deduction allowable after switchover point (of starting cam) up to 1000 1/min. Control-lever position 46.5°, control-rod travel deduction must be greater than 0.2 mm after switchover point (of starting cam).

TESTING PNEUMATIC SHUTOFF DEVICE -Control lever at idle stop. With n = 300 1/min. and pu = 450 mbar, control rod must move quickly to control-rod travel = 0 mm

Start-of-delivery sensor system: adjustment and blocking with device KDEP 1077 = 19.3°...19.7° (19.2...19.8°) angular displacement of cam following start of delivery of cylinder no. 1. Difference in start of delivery between max. and min. value = max. 1° angular displacement of cam

ADJUSTMENT OF ACTIVE BUCKING DAMPING (ARD) + Control lever on full-load stop. At n = 1000 min. -1, I = 2.5 A, difference in delivery referenced to full-load delivery (9.0...11.0) ccm/1000 strokes. +

Note remarks

: MB 3,0 W20 : 17.02.89 Test sheet Edition 06.09.88 Replaces

: ISO-4113 Test oil

Combination no. : 0 400 076 973

Injection pump

Pump designation : PES6M55C32ORS165 EP type number : 0 410 056 990

Governor

Governor design. : RSF315/2300M66-2

: 0 420 021 099 Governer no.

Customer-spec. information

Customer : DB

: 0M603-3.0 Engine

1st version kW : 80.0

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 469 990 351

Inlet press., bar: 1.00

Test nozzle holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter

x Wall thickness

x Length mm : 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 2.00...2.10

: (1.95...2.15)

Rack travel in mm : 20.00...22.00 Firing order : 1-5-3-6-2-Firing order

B16

Phasing : 0-60-120-180-240-300

Tolerance + - 0 : 0.00 (1.00)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1000

Rack travel in mm : 11.30...11.40

Del.guantity cm3/: 3.1...3.2

100 s: (3.0...3.3)

cm3 : 0.2Spread

100 s: (0.3)

rpm : 300.02nd speed Rack travel in mm : 5.6...5.8 Del.quantity cm3/: 0.6...0.7 100 s: (0.6...1.0)

cm3 : 0.1 Spread

100 s: (0.1)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1000 Speed

: 31.5...32.5 : (30.5...33.5) Del.quantity 1000

: 2.50 Spread cm3

1000 : (3.00)

RATED SPEED

1st version

Control lever

position degrees: 50...0

3rd rack travel in: 7,8...8,2

Speed rpm : 2500

4th rack travel in: 2950

: 0.00...1.00 Speed mar

SET IDLE CONTROL LEVER

POSITION

: 1000 Speed rpm

Rack travel in mm: 0,9...1,0

LOW IDLE 1

Control lever

position degrees: 13...17

Setting point w/out bumper spring

rpm : 300 Speed

Rack travel in mm: 5.7 STARTING FUEL DELIVERY Testing: Speed rpm : 220 Minimum rack trave: 7.00 Speed rpm : 100 Del.quantity cm3/ : 55.0...0.0 1000 s: (55.0...0.0) Rack travel in mm : 20.10...0.00 Speed : 300 rpm Rack travel in mm : 5.60...5.80 Rack travel in mm : 1.50 : 620...720 Speed HIGH IDLE rpm Speed : 1000 rpm Maximum rack trave: 1.00 1st version Speed rpm: 2500
Rack travel in mm: 7.80...8.20
Del.quantity cm3/: 22.0...26.0
1000 s: (21.0...27.0)
Spread cm3: 2.50
1000 s: (3.00) SET IDLE AUXILIARY SPRING rpm : 360 Speed Rack travel in mm : 4,20...4,40 : (4,10...4,50) TORQUE CONTROL Torque control curve - 1st version LOW IDLE rpm : 1000 1st speed Rack travel in m: 11.30...11.40 Speed rpm : 300 Rack travel in mm : 5.60...5.80 2nd speed rpm : 1800 Rack travel in m: 10.90...11.10 Del.quantity cm3/: 6.5...7.5 1000 s: (6.0...10.0) 3rd speed rpm : 2200 cm3 : 1.00 1000 s: (1.50) Rack travel in m: 10.60...10.80 Spread Aneroid/Altitude Compensator Test SETTING/TESTING ELECTRONIC IDLE REGULATION (ELR) 1st version Control lever at idle stop rpm : 315 Setting Speed Rack travel in mm : (12,6...14,0) : 1000 Speed rpm Del.quantity cm3/: -1000 s: (32,0...40,0) hPa : 930 Pressure Rack travel mm : 0.10...0.50 : 1,8 Current A Measurement Control lever at full-load stop : 2950 1/min: 1000 Speed Speed rpm Rack travel in mm : 0,0...1,0 1st pressure hPa : 840 Current Rack travel in m: 1.10...1.30 short-duration A: 3,0 2nd pressure hPa : 700 Starting test Rack travel in m: 2.30...2.70 rpm : 100 Speed Del.quantity cm3/: -min. 1000 s: 55,0 FUEL DELIVERY CHARACTERISTICS Remarks: 1st version Speed rpm : 1800 Del.quantity cm3/: 34.0...35.5 1000 s: (33.0...36.5) Spread cm3 : 2.50 1000 s: (3.00) Speed rpm : 2200 Pin projection = 16.60...16.70 mm Start-of-delivery sensor system: adjustment and blocking with device KDEP 1077 = 19.3°...19.7° Del.quantity cm3/: 33.5...35.5 1000 s: (32.5...36.5) (19.2...19.8°) angular displacement of cam following start of delivery of cylinder no. 1.
Difference in start of delivery between cm3 : 2.50 1000 s: (3.00) Spread max. and min. value = max. 1° angular

displacement of cam

CHECKING THE PNEUMATIC SHUTOFF BOX
-Control lever up against idle stop.
At n = 290 1/min and pu = 450 mbar
control rod must move briskly to
control-rod travel = 0 mm

CHECKING THE IDLE-SPEED AUXILIARY SPRING CUTOFF
-Control-lever position 49°, max.
0.2 mm control-rod travel deduction allowable after switchover point (of starting cam) up to 1000 1/min.
Control-lever position 46.5°, control-rod travel deduction must be greater than 0.2 mm after switchover point (of starting cam).

ADJUSTING ACTIVE JOLT DAMPING (ARD)
Control lever at full-load stop. With n= 1000 1/min., I = 2.5 A, control-rod-travel reduction = 2.25...2.55 mm

Note remarks

: MB 3,0 W10 : 17.02.89 : 30.03.87 Test sheet Edition Replaces Test oil : ISO-4113

Combination no. : 0 400 076 975

Injection pump

Pump designation : PES6M55C32ORS156 EP type number : 0 410 056 995

Governor

Governor design. : RSF315/2300M66 : 0 420 021 066 Governer no.

Customer-spec. information Customer : DB

Engine : 0M603-3.0

1st version kW : 80.0

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 469 990 351

Inlet press., bar: 1.00

Test nozzle holder

: 0 681 343 009 assembly

Opening

: 172...175 pressure, bar

Test Lines : 1 680 750 014

Outside diameter x Wall thickness

x Length mm : 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

: 2.00...2.10 Prestroke mm : (1.95...2.15)

Rack travel in mm : 20.00...22.00 Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - 0 : 0.00 (1.60)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1000

Rack travel in mm : 11.30...11.40

Del.quantity cm3/: 3.1...3.2

100 s: (3.0...3.3)

Spread cm3 : 0.2

100 s: (0.3)

2nd speed rpm : 300.0Rack travel in mm : 6.1...6.3 Del.quantity cm3/: 0.6...0.7

100 s: (0.6...1.0)

cm3 : 0.1Spread 100 s: (0.1)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1000 Speed

Del.quantity : 31.5...32.5 1000 : (30.5...33.5)

: 2.50 Spread cm3

1000 : (3.00)

RATED SPEED

1st version

Control lever

position degrees: 50...0

3rd rack travel in: 7,9...9,3

Speed rpm : 2500

4th rack travel in: 2950

Speed : 0.00...1.00 rpm

SET IDLE CONTROL LEVER **POSITION**

Speed : 1000 rpm Rack travel in mm : 0,9...1,0

LOW IDLE 1

Control lever

position degrees: 13...17

Setting point w/out bumper spring

Speed mar

B19

Rack travel in mm: 6.2 Testing: Speed rpm: 220
Minimum rack trave: 7.00
Speed rpm: 300
Rack travel in mm: 6.10...6.30
Rack travel in mm: 1.50
Speed Speed : 600...700 rom : 1000 Speed rom Maximum rack trave: 1.00 SET IDLE AUXILIARY SPRING rpm : 360 Rack travel in mm : 4,20...4,40 : (4,10...4,50) TORQUE CONTROL Torque control curve - 1st version : 1000 1st speed rpm Rack travel in m: 11.30...11.40 rpm : 1800 2nd speed Rack travel in m: 10.80...11.00 3rd speed rpm : 2200 Rack travel in m: 10.50...10.70 FUEL DELIVERY CHARACTERISTICS 1st version : 1800 Speed rpm Del.quantity cm3/: 34.0...35.5 1000 s: (33.0...36.5) cm3 : 2.50 Spread 1000 s: (3.00) Speed rpm : 2200
Del.quantity cm3/ : 33.5...35.5
1000 s: (32.5...36.5)
Spread cm3 : 2.50 1000 s: (3.00) STARTING FUEL DELIVERY Speed : 100 rpm Del.quantity cm3/: 55.0...0.0 1000 s: (55.0...0.0) Rack travel in mm: 20.10...0.00 HIGH IDLE 1st version : 2500 Speed rpm Rack travel in mm: 7.90...8.30

Del.quantity cm3/: 22.0...26.0

1000 s: (21.0...27.0)

Spread cm3: 2.50

1090 s: (3.00)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 6.10...6.30
Del.quantity cm3/ : 6.5...7.5
1000 s: (6.0...10.0)
Spread cm3 : 1.00
1000 s: (1.50)

SETTING/TESTING ELECTRONIC IDLE REGULATION (ELR)

Control lever at idle stop
Speed rpm: 315
Rack travel in mm: (12,0...13,4)
Del.quantity cm3/:1000 s: (30,0...38,0)
Current A: 1,8
Control lever at full-load stop
Speed rpm: 2950
Rack travel in mm: 0,0...1,0
Current
short-duration A: 3,0
Starting test
Speed rpm: 100
Del.quantity cm3/:min. 1000 s: 55,0

Remarks:

CHECKING THE IDLE-SPEED AUXILIARY SPRING CUTOFF
-Control-lever position 49°, max.
0.2 mm control-rod travel deduction allowable after switchover point (of starting cam) up to 1000 1/min.
Control-lever position 46.5°, control-rod travel deduction must be greater than 0.2 mm after switchover point (of starting cam).

CHECKING THE PNEUMATIC SHUTOFF BOX
-Control lever up against idle stop.
At n = 290 1/min and pu = 450 mbar
control rod must move briskly to
control-rod travel = 0 mm

Start-of-delivery sensor system: adjustment and blocking with device KDEP 1077 = 19.3°...19.7° (19.2...19.8°) angular displacement of cam following start of delivery of cylinder no. 1. Difference in start of delivery between max. and min. value = max. 1° angular

displacement of cam ADJUSTMENT OF ACTIVE BUCKING DAMPING (ARD) Control lever on full-load stop. At n = 1000 min. -1, I = 2.5 A, difference in delivery referenced to full-load delivery (8.8...10.8) ccm/1000 strokes.

Note remarks

Test sheet : MB 3,0 W21 : 17.02.89 Edition : 06.09.88 Replaces Test oil : ISO-4113

Combination no. : 0 400 076 976

Injection pump

Pump designation : PES6M55C32ORS157-1

EP type number : 0 410 056 991

Governor

Governor design. : RSF450/2300M68 : 0 420 021 095 Governer no.

Customer-spec. information

: DB Customer

: 0M603A (3.0L) Engine

1st version kW : 100.0

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 469 990 351

Inlet press., bar: 1.00

Test nozzle holder

: 0 681 343 009 assembly

Opening |

: 172...175 pressure, bar

Test Lines : 1 680 750 014

Outside diameter x Wall thickness

x Length mm : 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 2.20...2.30

: (2.15...2.35)

Rack travel in mm : 20.00...22.00 Firing order : 1-5-3-6-2-4

Tolerance + - 0

: 0-60-120-180-240-300

: 0.00 (1.00)

Time to cyl. no. : 1

BASIC SETTING

Phasing

1st speed rpm: 1000

Rack travel in mm : 13.10...13.20

Del.quantity cm3/: 4.6...4.7

100 s: (4.5...4.8)

Spread cm3 : 0.2

100 s: (0.3)

rpm : 450.02nd speed Rack travel in mm : 5.4...5.6

Del.quantity cm3/: 0.5...0.6 100 s: (0.5...0.9)

cm3 : 0.1Spread

100 s: (0.1)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000 Aneroid pressure h: 1850

Del.quantity

46.5...47.5 1000 : (45.5...48.5) cm3 : 2.50 1000 : (3.00)

Spread

RATED SPEED

1st version

Control lever

position degrees: 50...0

3rd rack travel in: 8,5...8,9 Speed rpm : 2500

4th rack travel in: 2950

: 0.00...1.00 Speed rpm

SET IDLE CONTROL LEVER

POSITION

rpm

Rack travel in mm : 1,9...2,0

LOW IDLE 1

Control lever

position degrees: 10...14

Setting point w/out bumper spring

B22

Rack travel in mm : 450 cm3 : 2.50 1000 s: (3.00) Spread Aneroid pressure h: 1050 Testing: : 250 Speed rpm Minimum rack trave: 13.00 Speed rpm : 450 Rack travel in mm : 5.40...5.60 Rack travel in mm : 2.50 Speed : 620...720 rpm : 1000 Speed STARTING FUEL DELIVERY rpm Maximum rack trave: 2.00 SET IDLE AUXILIARY SPRING : 100 Speed rpm Del.quantity cm3/: 52.0...0.0 1000 s: (52.0...0.0) Speed rpm : 500 Rack travel in mm : 4,30...4,50 Rack travel in mm : 20.10...0.00 : (4,20...4,60) TORQUE CONTROL HIGH IDLE Torque control curve - 1st version st speed rpm : 1000 Rack travel in m: 13.10...13.20 1st speed 1st version Aneroid pressure h: 1850 nd speed rpm : 1600 Rack travel in m: 12.40...12.60 Speed rpm : 2500 Rack travel in mm : 8.50...8.90 2nd speed rpm : 2200 3rd speed Del.quantity cm3/: 29.0...33.0 1000 s: (28.0...34.0) Rack travel in m: 11.50...11.70 cm3 : 2.50 1000 s: (3.00) Spread Aneroid/Altitude Compensator Test LOW IDLE 1st version Setting Speed : 1000 non Pressure hPa : 1500 : 0.00...0.40 Rack travel mm 1000 s: (1.50) Measurement 1/min: 1000 Speed SETTING PNUEUMATIC FAST IDLE (FLA) 1st pressure hPa : 1050 Rack travel in m: 2.70...2.90 2nd pressure hPa : 750 rpm : 500 Speed Rack travel in m: 4.40...4.80 Rack travel in mm : (6,8...8,4) Del.quantity cm3/: -1000 s: (14,0...22,0) FUEL DELIVERY CHARACTERISTICS hPa : 600 Vacuum 1st version Remarks: Aneroid pressure h: 1850 : 1600 Speed · rpm Pin projection = 16.60...16.70 mm Del.quantity cm3/: 45.5...47.0 1000 s: (44.5...48.0) cm3 : 2.50Spread CHECKING THE IDLE-SPEED AUXILIARY 1000 s: (3.00) SPRING CUTOFF -Control-lever position 49°, max.

0.2 mm control-rod travel deduction allowable after switchover point (of starting cam) up to 1000 1/min.

Control-lever position 46.5°, Aneroid pressure h: 1850 : 2200 Speed rom Del.quantity cm3/: 44.0...46.0 1000 s: (43.0...47.0)

control-rod travel deduction must be greater than 0.2 mm after switchover point (of starting cam).

Start-of-delivery sensor system: adjustment and blocking with device KDEP 1077 = 19.3°...19.7° (19.2...19.8°) angular displacement of cam following start of delivery of cylinder no. 1.
Difference in start of delivery between max. and min. value = max. 1° angular displacement of cam

CORRECTION OF INJECTED—FUEL QUANTITY—Set max. change plus/minus 0.75 mm control—rod travel at correction screw on ALDA pressure box.

Note remarks

: MB 3.0 W19 : 17.02.89 : 06.09.88 Test sheet Edition Replaces Test oil : ISO-4113

Combination no. : 0 400 076 977

Injection pump

Pump designation : PES6M55C32ORS165 EP type number : 0 410 056 990

Governor

Governor design. : RSF315/2300M60-7 : 0 420 021 092 Governer no.

Customer-spec. information Customer : DB

: 0M603-3.0; MJ:88 Engine

1st version kW : 75.0

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 469 990 351

Inlet press., bar: 1.00

Test nozzle holder

: 0 681 343 009 assembly

Openina

pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

: 2.00...2.10 Prestroke mm : (1.95...2.15)

Rack travel in mm : 20.00...22.00 Firing order : 1-5-3-6-2-

Phasing : 0-60-120-180-240-300

Tolerance + - 0 : 0.00 (1.00)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 800

Rack travel in mm : 12.70...12.80

Del.quantity cm3/: 3.0...3.1

100 s: (2.9...3.2)

cm3 : 0.2 Spread

100 s: (0.3)

rpm : 290.0 2nd speed Rack travel in mm: 6.9...7.1 Del.quantity cm3/: 0.5...0.6 100 s: (0.5...0.9) cm3 : 0.1

Spread

100 s: (0.1)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 800 Speed

Aneroid pressure h: 1100

Del.quantity : 30.5...31.5 1090 : (29.5...32.5) Spread cm3 : 2.50 1000 : (3.00)

RATED SPEED

1st version

Control Lever

position degrees: 0...50 3rd rack travel in: 9,2...9,6 Speed rpm : 2500

4th rack travel in: 2950

: 0.00...1.00 Speed rpm

SET IDLE CONTROL LEVER

POSITION

man Rack travel in mm : 1,9...2,0

LOW IDLE 1 Control lever

position degrees: 10...14

Setting point w/out bumper spring

B25

Speed rpm : 290 Rack travel in mm : 7.0 cm3 : 2.50 1000 s: (3.00) Spread Testing: speed rpm : 220 Minimum rack trave: 7.00 STARTING FUEL DELIVERY : 290 Speed rpm Rack travel in mm : 6.90...7.10 Rack travel in mm : 2.50 : 100 Speed rpm Del.quantity cm3/: 52.0...0.0 1000 s: (52.0...0.0) : 630...730 Speed rpm : 800 Rack travel in mm : 20.10...0.00 Speed rpm Maximum rack trave: 2.00 HIGH IDLE SET IDLE AUXILIARY SPRING Speed rpm : 360 Rack travel in mm : 5,50...5,70 : (5,40...5,80) 1st version Aneroid pressure h: 1100 Speed rpm : 2500
Rack travel in mm : 9.20...9.60
Del.quantity cm3/ : 22.0...26.0
1000 s: (21.0...27.0) TORQUE CONTROL Torque control curve - 1st version cm3 : 2.50 1st speed rpm : 800 Spread Rack travel in m: 12.70...12.80 1000 s: (3.00) 2nd speed rpm : 1600 Rack travel in m: 12.00...12.20 3rd speed rpm : 2200 Rack travel in m: 11.40...11.60 LOW IDLE Speed rpm : 290
Rack travel in mm : 6.90...7.10
Del.quantity cm3/: 5.5...6.5 Aneroid/Altitude 1000 s: (5.0...9.5) Compensator Test cm3 : 1.00Spread 1000 s: (1.50) 1st version Setting SETTING/TESTING ELECTRONIC IDLE : 800 REGULATION (ELR) Speed rpm hPa : 950 Pressure : 0.00...0.20 Rack travel mm Control lever at idle stop Speed rpm : 315 Rack travel in mm : (13,0...14,4) Measurement 1/min: 800 Del.quantity cm3/: -1000 s: (28,0...36,0) Speed 1st pressure hPa : 900 : 1,8 Current A Rack travel in m: 0.50...0.70 Control lever at full-load stop : 2950 2nd pressure hPa : 750 rpm Rack travel in mm : 0,0...1,0) Rack travel in m: 1.80...2.20 Current FUEL DELIVERY CHARACTERISTICS short-duration A: 3,0 Starting test Speed rpm : 100 Del.quantity cm3/: -min. 1000 s: 52,0 1st version Aneroid pressure h: 1100 Speed rpm : 1600 Del.quantity cm3/: 31.5...33.0 Remarks: 1000 s: (30.5...34.0) cm3 : 2.50 Pin projection = 16.60...16.70 mm Spread 1000 s: (3.00) Aneroid pressure h: 1100 Speed rpm : 2200 Del.quantity cm3/: 32.0...34.0 1000 s: (31.0...35.0) CHECKING THE IDLE-SPEED AUXILIARY SPRING CUTOFF -Control-lever position 49°, max. 0.2 mm control-rod travel deduction allowable after switchover point (of starting cam) up to 1000 1/min. Control-lever position 46.5°, control-rod travel deduction must be greater than 0.2 mm after switchover point (of starting cam).

CHECKING THE PNEUMATIC SHUTOFF BOX
-Control lever up against idle stop.
At n = 290 1/min and pu = 450 mbar
control rod must move briskly to
control-rod travel = 0 mm

Start-of-delivery sensor system: adjustment and blocking with device KDEP 1077 = 19.3°...19.7° (19.2...19.8°) angular displacement of cam following start of delivery of cylinder no. 1. Difference in start of delivery between max. and min. value = max. 1° angular displacement of cam

Note remarks

: MB 3,0 W4 : 17.02.89 Test sheet Edition : 02.86 Replaces : ISO-4113 Test oil

Combination no. : 0 400 076 986

Injection pump

Pump designation : PES6M55C32ORS157-1

EP type number : 0 410 056 991

Governor

Governor design. : RSF315/2300M65 : 0 420 021 060 Governer no.

Customer-spec. information

Customer : DB

: 0M603A Touring Engine

1st version kW : 110.0

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 469 990 351

Inlet press., bar: 1.00

Test nozzle holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

: 2.20...2.30 Prestroke mm

: (2.15...2.35)

Rack travel in mm : 20.00...22.00

: 1-5-3-6-2-4 Firing order

Phasing : 0-60-120-180-240-300

: 0.00 (1.00) Tolerance + - 0

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1000

Rack travel in mm : 13.90...14.00

Del.quantity cm3/: 5.1...5.2

100 s: (5.0...5.3)

cm3 : 0.2 Spread

100 s: (0.3)

rpm : 290.02nd speed Rack travel in mm: 5.3...5.5 Del.quantity cm3/: 0.5...0.6

100 s: (0.5...0.9)

Spread cm3 : 0.1100 s: (0.1)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000 Aneroid pressure h: 1850

: 51.0...52.0 Del quantity

1000 : (50.0...53.0)

: 2.50 Spread cm3 1000 : (3.00)

RATED SPEED

1st version

Control lever

position degrees: 50...0
3rd rack travel in: 8,1...8,5
Speed rpm : 2500

4th rack travel in: 2950

: 0.00...1.00 Speed rpm

SET IDLE CONTROL LEVER

POSITION

rpm Rack travel in mm : 1,7...1,8

LOW IDLE 1 Control Lever

position degrees: 8...12

Setting point w/out bumper spring

B28

Speed rpm : 290 Rack travel in mm : 5.4 Testing: Speed rpm : 200 Minimum rack trave: 7.00 Speed rpm : 290 Rack travel in mm : 5.305.50 Rack travel in mm : 2.50 Speed rpm : 510610	Spread cm3: 2.50 1000 s: (3.00) Aneroid pressure h: 1050 Speed rpm: 1000 Del.quantity cm3/: 33.034.0 1000 s: (32.035.0) Spread cm3: 2.50 1000 s: (3.00)
Speed rpm : 1000 Maximum rack trave: 1.80 SET IDLE AUXILIARY SPRING Speed rpm : 360 Rack travel in mm : 4,204,40	STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/: 52.00.0 1000 s: (52.00.0)
: (4,104,50) TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1000 Rack travel in m: 13.9014.00 2nd speed rpm : 1600 Rack travel in m: 13.2013.40 3rd speed rpm : 2200 Rack travel in m: 12.3012.50 Aneroid/Altitude Compensator Test	Rack travel in mm: 20.100.00 HIGH IDLE 1st version Aneroid pressure h: 1850 Speed rpm: 2500 Rack travel in mm: 8.108.50 Del.quantity cm3/: 29.033.0 1000 s: (28.034.0) Spread cm3: 2.50 1000 s: (3.00)
1st version Setting Speed rpm : 1000 Pressure hPa : 1600 Rack travel mm : 0.500.90 Measurement	LOW IDLE Speed rpm : 290 Rack travel in mm : 5.305.50 Del.quantity cm3/: 5.56.5 1000 s: (5.09.5) Spread cm3 : 1.00 1000 s: (1.50)
Speed 1/min: 1000 1st pressure hPa: 1050 Rack travel in m: 3.904.10 2nd pressure hPa: 750 Rack travel in m: 5.806.20 FUEL DELIVERY CHARACTERISTICS	SETTING/TESTING ELECTRONIC IDLE REGULATION (ELR) Control lever at idle stop Speed rpm : 315 Rack travel in mm : (12,814,2) Del.quantity cm3/: - 1000 s: (42,049,0) Current A : 1,8
1st version Aneroid pressure h: 1850 Speed rpm : 1600 Del.quantity cm3/: 50.051.5	Control lever at full-load stop Speed rpm : 2950 Rack travel in mm : 0,01,0 Current short-duration A : 3,0 Starting test Speed rpm : 100 Del.quantity cm3/:- min. 1000 s: 55,0 Remarks: Pin projection = 16.6016.70 mm

CORRECTION OF INJECTED—FUEL QUANTITY—Set max. change plus/minus 0.75 mm control—rod travel at correction screw on ALDA pressure box.

CHECKING THE IDLE-SPEED AUXILIARY SPRING CUTOFF
-Control-lever position 49°, max.
0.2 mm control-rod travel deduction allowable after switchover point (of starting cam) up to 1000 1/min.
Control-lever position 46.5°, control-rod travel deduction must be greater than 0.2 mm after switchover point (of starting cam).

CHECKING THE PNEUMATIC SHUTOFF BOX
-Control lever up against idle stop.
At n = 290 1/min and pu = 450 mbar
control rod must move briskly to
control-rod travel = 0 mm

Difference in start of delivery between max. and min. value = max. 1° angular displacement of cam

Start-of-delivery sensor system: adjustment and blocking with device KDEP 1077 = 19.3°...19.7° (19.2...19.8°) angular displacement of cam following start of delivery of cylinder no. 1.

Note remarks

: MB 3,0 W3 : 17.02.89 Test sheet Edition : 02.86 Replaces : ISO-4113 Test oil

: 0 400 076 987 Combination no.

Injection pump

Pump designation : PES6M55C32ORS157 : 0 410 056 993 EP type number

Governor

Governor design. : RSF315/2300M64-2 Governer no. : 0 420 021 059

Customer-spec. information

Customer : DB

Engine : 0M603A

1st version kW : 110.0

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 469 990 351

Inlet press., bar: 1.00

Test nozzle holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

Test Lines : 1 680 750 014

Outside diameter x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

: 2.20...2.30 Prestroke mm : (2.15...2.35)

Rack travel in mm : 20.00...22.00

Firing order : 1-5-3-6-

Time to cyl. no. : 1

Tolerance + - 0

BASIC SETTING

Phasing

rpm : 10001st speed

Rack travel in mm : 13.90...14.00

Del.quantity cm3/: 5.1...5.2

100 s: (5.0...5.3)

: 0-60-120-180-240-300

: 0.00 (1.00)

cm3 : 0.2Spread

100 s: (0.3)

2nd speed rpm : 290.0 Rack travel in mm : 5.3...5.5 Del.quantity cm3/: 0.5...0.6

100 s: (0.5...0.9)

Spread cm3 : 0.1100 s: (0.1)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000Aneroid pressure h: 1850

Anerous Del.quantity 1000 1000 : (50.0...53.0) cm3 : 2.50 1000 : (3.00)

Spread

RATED SPEED

1st version Control lever

position degrees: 50...0 3rd rack travel in: 8,1...8,5 Speed rpm : 2500

4th rack travel in: 2950

: 0.00...1.00 Speed rpm

SET IDLE CONTROL LEVER

POSITION

rpm Rack travel in mm : 1,7...1,8

LOW IDLE 1 Control lever

position degrees: 8...12

Setting point w/out bumper spring

CO3

Speed rpm : 290 Rack travel in mm : 5.4	+ Spread cm3 : 2.50 + 1000 s: (3.00)
Testing: Speed rpm : 200 Minimum rack trave: 7.00 Speed rpm : 290 Rack travel in mm : 5.305.50 Rack travel in mm : 2.50	Aneroid pressure h: 1050 Speed rpm : 1000 Del.quantity cm3/: 33.034.0 1000 s: (32.035.0) Spread cm3 : 2.50 1000 s: (3.00)
Speed rpm : 510610 Speed rpm : 1000 Maximum rack trave: 1.80	STARTING FUEL DELIVERY
SET IDLE AUXILIARY SPRING Speed rpm : 360 Rack travel in mm : 4,204,40 : (4,104,50)	Speed rpm: 100
TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1000 Rack travel in m: 13.9014.00 2nd speed rpm : 1600 Rack travel in m: 13.2013.40 3rd speed rpm : 2200 Rack travel in m: 12.3012.50 Aneroid/Altitude Compensator Test	HIGH IDLE 1st version Aneroid pressure h: 1850 Speed rpm : 2500 Rack travel in mm : 8.108.50 Del.quantity cm3/: 29.033.0 1000 s: (28.034.0) Spread cm3 : 2.50 1000 s: (3.00)
1st version Setting Speed rpm : 1000 Pressure hPa : 1600 Rack travel mm : 0.500.90	LOW IDLE Speed rpm: 290 Rack travel in mm: 5.305.50 Del.quantity cm3/: 5.56.5 1000 s: (5.09.5) Spread cm3: 1.00 1000 s: (1.50)
Measurement Speed 1/min: 1000 1st pressure hPa: 1050 Rack travel in m: 3.904.10 2nd pressure hPa: 750	SETTING/TESTING ELECTRONIC IDLE REGULATION (ELR) Control lever at idle stop Speed rpm : 315
Rack travel in m: 5.806.20 FUEL DELIVERY CHARACTERISTICS	Rack travel in mm: (12,814,2) Del.quantity cm3/: - 1000 s: (42,049,0) Current A: 1,8 Control lever at full-load stop
1st version Aneroid pressure h: 1850 Speed rpm : 1600 Del.quantity cm3/: 50.051.5	Speed rpm: 2950 Rack travel in mm: 0,01,0 Current short-duration A: 3,0 Starting test Speed rpm: 100 Del.quantity cm3/: - min. 1000 s: 52,0 Remarks:
1000 3. 541.331.37	\overline{I} Pin projection = 16 60 16 70 mm

CORRECTION OF INJECTED-FUEL QUANTITY -Set max. change plus/minus 0.75 mm control-rod travel at correction screw on ALDA pressure box.

CHECKING THE IDLE—SPEED AUXILIARY SPRING CUTOFF
—Control—lever position 49°, max.

0.2 mm control—rod travel deduction allowable after switchover point (of starting cam) up to 1000 1/min.

Control—lever position 46.5°, control—rod travel deduction must be greater than 0.2 mm after switchover point (of starting cam).

CHECKING THE PNEUMATIC SHUTOFF BOX
-Control lever up against idle stop.
At n = 290 1/min and pu = 450 mbar
control rod must move briskly to
control-rod travel = 0 mm

Difference in start of delivery between max. and min. value = max. 1° angular displacement of cam

Start-of-delivery sensor system: adjustment and blocking with device KDEP 1077 = 19.3°...19.7° (19.2...19.8°) angular displacement of cam following start of delivery of cylinder no. 1.

Testing and adjusting the control-rod-travel sensor with evaluation circuit R2.1.3

Receiving inspection
Shift control lever to full-load stop. Set 13.5 V at stabilizer. Apply 1850 hPa to ALDA. Run up to speed of 1000 1/min; a voltage of 3.230...3.310 (3.190...3.350) V must be displayed on the digital voltmeter.

Adjustment of the control-rod travel sensor
At a speed of 1000 1/min, set fuel delivery at 23.0...24.0 (22.0...25.0) ccm/1000 strokes with control lever.
Shift control-rod-travel sensor until U = 2.095...2.105 (2.098...2.102) V is indicated. Tighten fastening screws

with 1...2 Nm. Control lever to full-load stop; voltage value of 3.230... 3.310 V must be attained.

Note remarks

: MB 3,0 W5 : 17.02.89 Test sheet Edition Replaces : 12.09.86 : ISO-4113 Test oil

: 0 400 076 988 Combination no.

Injection pump

Pump designation : PES6M55C32ORS156 EP type number : 0 410 056 995

Governor

Governor design. : RSF315/2300M60-4 : 0 420 021 057 Governer no.

Customer-spec. information

: DB Customer

: 0M603-3.0 Engine

1st version kW : 80.0

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 469 990 351

Inlet press., bar: 1.00

Test nozzle holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 2.00...2.10 : (1.95...2.15)

Rack travel in mm : 20.00...22.00

: 1-5- 3- 6- 2-Firing order

Phasina : 0-60-120-180-240-300

Tolerance + - 0 : 0.00 (1.00)

Time to cyl. no. : 1

BASIC SETTING

rpm: 1000 1st speed

Rack travel in mm : 11.30...11.40

Del.quantity cm3/: 3.1...3.2

100 s: (3.0...3.3)

cm3 : 0.2Spread

100 s: (0.3)

2nd speed rpm : 290.0 Rack travel in mm : 5.4...5.6

Del.quantity cm3/: 0.5...0.6 100 s: (0.5...0.9)

Spread cm3 : 0.1

100 s: (0.1)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1000 Speed

Del.quantity : 31.5...32.5 1000 : (30.5...33.5)

: 2.50 Spread cm3

: (3.00) 1000

RATED SPEED

1st version

Control lever

position degrees: 50...0

3rd rack travel in: 7,80...8,20
Speed rpm : 2500
4th rack travel in: 2950

: 0.00...1.00 Speed rpm

SET IDLE CONTROL LEVER

POSITION

: 1000 Speed MCC

Rack travel in mm: 0,9...1,0

LOW IDLE 1

Control lever

position degrees: 13...17

Setting point w/out bumper spring

rpm : 290 Speed

CO6

Rack travel in mm : 5.5 STARTING FUEL DELIVERY Testina: Speed rpm : 220 Minimum rack trave: 7.00 Speed rpm : 290
Rack travel in mm : 5.40...5.60
Rack travel in mm : 1.50 : 620...720 Speed HIGH IDLE rpm : 1000 Speed rpm Maximum rack trave: 1.00 1st version : 2500 Speed rpm Rack travel in mm : 7.80...8.20
Del.quantity cm3/ : 22.0...26.0
1000 s: (21.0...27.0)
Spread cm3 : 2.50
1000 s: (3.00) SET IDLE AUXILIARY SPRING : 360 Speed rpm Rack travel in mm : 4,20...4,40 : (4,10...4,50) TORQUE CONTROL Torque control curve - 1st version LOW IDLE : 1000 1st speed rpm Rack travel in m: 11.30...11.40 Speed rpm Rack travel in mm : 5.40...5.60 : 1800 2nd speed rpm Del.quantity cm3/: 5.5...6.5 1000 s: (5.0...9.5) Rack travel in m: 10.90...11.10 3rd speed rpm : 2200 Rack travel in m: 10.60...10.80 cm3 : 1.00Spread 1000 s: (1.50) Aneroid/Altitude SETTING/TESTING ELECTRONIC IDLE Compensator Test REGULATION (ELR) 1st version Control lever at idle stop : 315 Settina Speed rpm Rack travel in mm : (12,6...14,0) : 1000 Speed rpm Del.quantity cm3/: -1000 s: (32,0...40,0) hPa : 930 Pressure Rack travel mm : 0.10...0.50 1,8 Current A Control lever at full-load stop Speed rpm : 2950 Measurement 1/min: 1000 Speed Rack travel in mm : 0,0...1,0 1st pressure hPa : 840 Current Rack travel in m: 1.10...1.30 short-duration A: 3,0 2nd pressure hPa : 700 Starting test Rack travel in m: 2.30...2.70 Speed rpm Del.quantity cm3/: -min. 1000 s: 55,0 FUEL DELIVERY CHARACTERISTICS Remarks: 1st version : 1800 Speed rpm Del.quantity cm3/: 34.0...35.5 1000 s: (33.0...36.5) Pin projection = 16.60...16.70 mm cm3 : 2.50 1000 s: (3.00) Spread Start-of-delivery sensor system: adjustment and blocking with device KDEP 1077 = 19.3°...19.7° (19.2...19.8°) angular displacement of cam following start of delivery of cylinder no. 1.

Difference in start of delivery between : 2200 rpm Del.quantity cm3/: 33.5...35.5 1000 s: (32.5...36.5) : 2.50 Spread cm3 1000 s: (3.00) max. and min. value = max. 1° angular

displacement of cam

CHECKING THE PNEUMATIC SHUTOFF BOX
-Control lever up against idle stop.
At n = 290 1/min and pu = 450 mbar
control rod must move briskly to
control-rod travel = 0 mm

CHECKING THE IDLE—SPEED AUXILIARY SPRING CUTOFF
—Control—lever position 49°, max.

0.2 mm control—rod travel deduction allowable after switchover point (of starting cam) up to 1000 1/min.

Control—lever position 46.5°, control—rod travel deduction must be greater than 0.2 mm after switchover point (of starting cam).

Note remarks

: MB 3,0 W2 : 17.02.89 Test sheet Edition : 02.86 Replaces

: ISO-4113 Test oil

: 0 400 076 992 Combination no.

Injection pump

Pump designation : PES6M55C32ORS157 EP type number : 0 410 056 993

Governor

Governor design. : RSF315/2300M64 : 0 420 021 044 Governer no.

Customer-spec. information Customer : DB

Engine : 0M603A

1st version kW : 110.0

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 469 990 351

Inlet press., bar: 1.00

Test nozzle holder

: 0 681 343 009 assembly

Opening

: 172...175 pressure, bar

: 1 680 750 014 Test lines

Outside diameter

x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ___

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 2.20...2.30

: (2.15...2.35)

Rack travel in mm : 20.00...22.00 Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - 0 : 0.00 (1.00)

Time to cyl. no. : 1

BASIC SETTING

rpm: 1000 1st speed

Rack travel in mm : 13.90...14.00

Del.quantity cm3/ : 5.1...5.2

100 s: (5.0...5.3)

cm3 : 0.2Spread

100 s: (0.3)

rpm : 290.0 2nd speed Rack travel in mm : 5.3...5.5

Del.quantity cm3/: 0.5...0.6 100 s: (0.5...0.9)

cm3 : 0.1 Spread

100 s: (0.1)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 1850

Del.quantity : 51.0...53.0)

: 2.50 Spread cm3

1000 : (3.00)

RATED SPEED

1st version

Control lever

position degrees: 50...0

3rd rack travel in: 8,10...8,50
Speed rpm: 2500

4th rack travel in: 2950

: 0.00...1.00 Speed rpm

SET IDLE CONTROL LEVER

POSITION

rpm

Rack travel in mm : 1,7...1,8

LOW IDLE 1

Control Lever

position degrees: 8...12

Setting point w/out bumper spring

CD9

Speed rpm : 290 Rack travel in mm : 5.4 Testing: Speed rpm : 200 Minimum rack trave: 7.00 Speed rpm : 290 Rack travel in mm : 5.305.50 Rack travel in mm : 2.50	Spread cm3 : 2.50 1000 s: (3.00) Aneroid pressure h: 1050 Speed rpm : 1000 Del.quantity cm3/ : 33.034.0 1000 s: (32.035.0) Spread cm3 : 2.50 1000 s: (3.00)
Speed rpm : 510610 Speed rpm : 1000 Maximum rack trave: 1.80	STARTING FUEL DELIVERY
SET IDLE AUXILIARY SPRING Speed rpm : 360 Rack travel in mm : 4,204,40 : (4,104,50)	Speed rpm : 100 Del.quantity cm3/: 52.00.0 1000 s: (52.00.0) Rack travel in mm : 20.100.00
TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1000	HIGH IDLE 1st version
Rack travel in m: 13.9014.00 2nd speed rpm : 1600 Rack travel in m: 13.2013.40 3rd speed rpm : 2200 Rack travel in m: 12.3012.50 Aneroid/Altitude	Aneroid pressure h: 1850 Speed rpm : 2500 Rack travel in mm : 8.108.50 Del.quantity cm3/: 29.033.0 1000 s: (28.034.0) Spread cm3 : 2.50 1000 s: (3.00)
Compensator Test	LOW IDLE
1st version Setting Speed rpm : 1000 Pressure hPa : 1600 Rack travel mm : 0.500.90	Speed rpm: 290 Rack travel in mm: 5.305.50 Del.quantity cm3/: 5.56.5 1000 s: (5.09.5) Spread cm3: 1.00 1000 s: (1.50)
Measurement Speed 1/min: 1000	SETTING/TESTING ELECTRONIC IDLE REGULATION (ELR)
1st pressure hPa : 1050 Rack travel in m: 3.904.10 2nd pressure hPa : 750 Rack travel in m: 5.806.20	Control lever at idle stop Speed rpm : 315 Rack travel in mm : (12,814,2) Del.quantity cm3/: -
FUEL DELIVERY CHARACTERISTICS	1000 s: (42,049,0) Current A : 1,8
1st version Aneroid pressure h: 1850 Speed rpm : 1600 Del.quantity cm3/ : 50.051.5	Control lever at full-load stop Speed rpm: 2950 Rack travel in mm: 0,01,0 Current short-duration A: 3,0 Starting test Speed rpm: 100 Del.quantity cm3/:- min. 1000 s: 52,0 Remarks: Pin projection = 16.6016.70 mm

CORRECTION OF INJECTED-FUEL QUANTITY -Set max. change plus/minus 0.75 mm control-rod travel at correction screw on ALDA pressure box.

CHECKING THE IDLE—SPEED AUXILIARY SPRING CUTOFF

-Control—lever position 49°, max.

0.2 mm control—rod travel deduction allowable after switchover point (of starting cam) up to 1000 1/min.

Control—lever position 46.5°, control—rod travel deduction must be greater than 0.2 mm after switchover point (of starting cam).

CHECKING THE PNEUMATIC SHUTOFF BOX
-Control lever up against idle stop.
At n = 290 1/min and pu = 450 mbar
control rod must move briskly to
control-rod travel = 0 mm

Difference in start of delivery between max. and min. value = max. 1° angular displacement of cam

Start-of-delivery sensor system: adjustment and blocking with device KDEP 1077 = 19.3°...19.7° (19.2...19.8°) angular displacement of cam following start of delivery of cylinder no. 1.

Testing and adjusting the control-rod-travel sensor with evaluation circuit R2.1.3

Receiving inspection
Shift control lever to full-load stop. Set 13.5 V at stabilizer. Apply 1850 hPa to ALDA. Run up to speed of 1000 1/min; a voltage of 3.230...3.310 (3.190...3.350) V must be displayed on the digital voltmeter.

Adjustment of the control-rod travel sensor
At a speed of 1000 1/min, set fuel delivery at 23.0...24.0 (22.0...25.0) ccm/1000 strokes with control lever. Shift control-rod-travel sensor until U = 2.095...2.105 (2.098...2.102) V is indicated. Tighten fastening screws

with 1...2 Nm. Control lever to full-load stop; voltage value of 3.230... 3.310 V must be attained.

Note remarks

: MB 3,0 W : 06.04.88 Test sheet Edition : 09.03.87 Replaces Test oil : ISO-4113

: 0 400 076 994 Combination no.

Injection pump

Pump designation : PES6M55C32ORS156 EP type number : 0 410 056 995

Governor

Governor design. : RSF315/23GOM59-3 : 0 420 021 040 Governer no.

Customer-spec. information Customer : DB

Engine : 0M603-3.0

1st version kW : 80.0

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 469 990 351

Inlet press., bar: 1.00

Test nozzle holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

: 2.00...2.10 Prestroke mm

: (1.95...2.15)

Rack travel in mm : 20.00...22.00 Firing order : 1-5-3-6-2-Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - 0 : 0.00 (1.00)

Time to cyl. no. : 1

BASIC SETTING

rpm: 1000 1st speed

Rack travel in mm : 11.30...11.40

Del.quantity cm3/: 3.1...3.2

100 s: (3.0...3.3)

Spread cm3 : 0.2

100 s: (0.3)

rpm : 290.0 2nd speed Rack travel in mm: 5.4...5.6

Del.quantity cm3/: 0.5...0.6 100 s: (0.5...0.9)

cm3 : 0.1 Spread 100 s: (0.1)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1000 Speed

: 31.5...32.5 : (30.5...33.5) Del.quantity 1000

: 2.50 Spread cm3

1000 : (3.00)

RATED SPEED

1st version Control Lever

position degrees: 50...0 3rd rack travel in: 7,80...8,20

: 2500 Speed rpm

4th rack travel in: 2950

: 0.00...1.00 Speed rpm

SET IDLE CONTROL LEVER

POSITION

: 10000 Speed rpm Rack travel in mm: ,9...1,0

LOW IDLE 1 Control lever

position degrees: 13...17

Setting point w/out bumper spring

Speed rpm : 290

C12

Rack travel in mm: 5.5 Testing: : 220 Speed rpm Minimum rack trave: 7.00 : 290 rpm Rack travel in mm: 5.40...5.60
Rack travel in mm: 1.50
Speed rpm: 620...720
Speed rpm: 1000
Maximum rack trave: 1.00 SET IDLE AUXILIARY SPRING : 360 man Rack travel in mm : 4,20...4,40 : (4,10...4,50) TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1000 Rack travel in m: 11.30...11.40 and speed rpm : 1800 Rack travel in m: 10.90...11.10 rd speed rpm : 2200 2nd speed 3rd speed Rack travel in m: 10.60...10.80 FUEL DELIVERY CHARACTERISTICS 1st version Speed : 1800 rpm Del.quantity cm3/: 34.0...35.5 1000 s: (33.0...36.5) cm3 : 2.50 Spread 1000 s: (3.00) Speed rpm : 2200
Del.quantity cm3/ : 33.5...35.5
1000 s: (32.5...36.5)
Spread cm3 : 2.50
1000 s: (3.00) STARTING FUEL DELIVERY rpm : 100 Speed Del.quantity cm3/: 55.0...0.0 1000 s: (55.0...0.0) Rack travel in mm : 20.10...0.00 HIGH IDLE 1st version Speed rpm : 2500 Rack travel in mm : 7.80...8.20 Del.quantity cm3/: 22.0...26.0 1000 s: (21.0...27.0) cm3 : 2.50Spread

1000 s: (3.00)

Rack trave: (1) (100)

Del.quantity cm3/:
1000 s: 32,0...40,0)

Current A : 1,8

Control lever at full-load stop

Speed rpm : 2950 Rack travel in mm : 0,0...1,0 Current

short-duration A: 3,0 Starting test

Speed rpm : 100 Del.quantity cm3/: min. 1000 s: 55,0

Remarks:

Start-of-delivery sensor system: adjustment and blocking with device KDEP 1077 = 19.3°...19.7° (19.2...19.8°) angular displacement of cam following start of delivery of cylinder no. 1. Difference in start of delivery between max. and min. value = max. 1° angular displacement of cam

CHECKING THE PNEUMATIC SHUTOFF BOX
-Control lever up against idle stop.
At n = 290 1/min and pu = 450 mbar
control rod must move briskly to
control-rod travel = 0 mm

CHECKING THE IDLE-SPEED AUXILIARY SPRING CUTOFF
-Control-lever position 49°, max.
0.2 mm control-rod travel deduction allowable after switchover point (of starting cam) up to 1000 1/min.
Control-lever position 46.5°, control-rod travel deduction must be greater than 0.2 mm after switchover point (of starting cam).

Note remarks

Test sheet : KHD 1 g 40 Edition : 24.02.89

Replaces : -

Test oil : ISO-4113

Combination no. : 0 400 463 158

Injection pump

Pump designation : PES3A80D41D/3RS1324

EP type number : 0 410 483 017

Governor

Governor design. : RSV325...1150A8C705-

1L

Governer no. : 0 420 232 521

Customer—spec. information Customer : KHD

tabeomet . Tab

Engine : F3L912

1st version kW : 37.0 Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Opening

pressure, bar : 172...175

Test Lines : 1 680 750 014

Outside diameter x Wall thickness

x Length mm : 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 1.90...2.00

: 1.90...2.00 : (1.85...2.05) Rack travel in mm : 9.00...12.00

Firing order : 1- 3- 2

Phasing : 0-120-240

Tolerance $+ - \circ : 0.50 (0.75)$

BASIC SETTING

1st speed rpm: 1150

Rack travel in mm : 10.50...10.60

Del.quantity cm3/: 5.4...5.5

100 s: (5.2...5.6)

Spread cm3 : 0.2

100 s: (0.4)

2nd speed rpm : 325.0

Rack travel in mm : 8.3...8.5 Del.quantity cm3/ : 1.2...1.8

100 s: (1.0...1.9)

Spread cm3 : 0.2

100 s: (0.3)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

Speed rpm: 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 5.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm: 1150

Del.quantity : 54.0...55.0 1000 : (52.5...56.5)

Spread cm3 : 2.50

1000 : (4.00)

RATED SPEED

1st version

Control lever

position degrees: 54...62

Testing:

1st rack travel in: 9.50

Speed rpm : 1190...1200

2nd rack travel in: 4.00

Speed rpm : 1225...1255

3rd rack travel in: 4.00

rpm : 1240...1270 Speed 4th rack travel in: 1420

rpm : 0.30...1.40Speed

LOW IDLE 1 Control lever

position degrees: 19...27

Setting point w/out bumper spring

Speed rpm : 325 Rack travel in mm: 5.6

Testing:

Speed : 100 rpm Minimum rack trave: 19.50 : 325 Speed rpm

Rack travel in mm : 6.00...6.20

Rack travel in mm: 2.00 Speed : 410...470 rpm

TORQUE CONTROL

Torque control curve - 1st version

: 1150 1st speed rpm

Rack travel in m: 10.50...10.60

2nd speed : 500 rpm

Rack travel in m: 11.30...11.40

3rd speed rpm : 950

Rack travel in m: 10.80...11.00

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 750 Del.quantity cm3/ : 51.5...53.5 1000 s: (49.5...55.5)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 9.50

rpm : 1190...1200 Speed

STARTING FUEL DELIVERY

Speed : 100 rpm

Del.quantity cm3/: 120.0...130.0

1000 s: (117.0...133.0)

Rack travel in mm : 19.50...21.00

Remarks:

: FENDT

APPLICATION

Tractor (tractor engines)

Note remarks

: KHD 1 g 41 : 24.02.89 Test sheet Edition

Replaces

Test oil : ISO-4113

Combination no. : 0 400 463 159

Injection pump

Pump designation : PES3A80D410/3RS1324

EP type number : 0 410 483 017

Governor

Governor design. : RSV325...1095A8C657-

: 0 420 232 523 Governer no.

Customer-spec. information Customer : KHD

Engine : F3L913 *

1st version kW : 33.0 : 2190 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter

x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 1.90...2.00 Prestroke mm

: (1.85...2.05)

Tolerance + - 0 : 0.50 (0.75)

Rack travel in mm : 9.00...12.00 Firing order : 1- 3- 2

Time to cyl. no. : 1

BASIC SETTING

Phasina

1st speed rpm: 800

Rack travel in mm : 10.70...10.80

Del.quantity cm3/ : 5.0...5.1

100 s: (4.9...5.3)

: 0-120-240

cm3 : 0.2Spread

100 s: (0.3)

rpm : 325.0 2nd speed Rack travel in mm: 8.3...8.5 Del.quantity cm3/: 1.2...1.8

100 s: (1.0...1.9) cm3 : 0.2Spread

100 s: (0.3)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3 rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 5.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

Speed rpm : 800

: 50.5...51.5 Del.quantity 1000 : (49.0...53.0)

: 2.50 Spread cm3

1000 : (3.50)

RATED SPEED

1st version

Control lever

position degrees: 51...59

Testina:

1st rack travel in: 8.70

rpm : 1145...1155 Speed

2nd rack travel in: 4.00

rpm : 1175...1205 Speed Remarks: 3rd rack travel in: 4.00 Speed rpm : 1185...1215 4th rack travel in: 1350 Speed rpm : 0.30...1.40 LOW IDLE 1 Control lever position degrees: 19...27 Setting point w/out bumper spring Speed rpm : 325 Rack travel in mm : 5.5 Testing: Speed rpm : 100 Minimum rack trave: 19.50 : 325 rpm Rack travel in mm : 5.90...6.10 Rack travel in mm : 2.00 rpm : 410...470 Speed TORQUE CONTROL Torque control curve - 1st version st speed rpm : 1095 Rack travel in m: 9.70...9.80 1st speed rpm : 500 2nd speed Rack travel in m: 10.70...10.80 3rd speed rpm : 1015 Rack travel in m: 10.20...10.40 FUEL DELIVERY CHARACTERISTICS 1st version Speed rpm : 1095 Del.quantity cm3/ : 48.0...52.0 1000 s: (46.0...54.0) Speed rpm: 800 Del.quantity cm3/: 33.0...34.0 1000 s: (31.0...36.0) Spread : 2.50 cm3 1000 s: (-) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 8.70 rpm : 1145...1155 Speed STARTING FUEL DELIVERY : 100 Speed rpm Del.quantity cm3/: 120.0...130.0 1000 s: (117.0...133.0) Rack travel in mm : 19.50...21.00

: FENDT

Note remarks

Test sheet : KHD 1 g 42 : 03.03.89 Edition

Replaces

Test oil : ISO-4113

: 0 400 464 135 Combination no.

Injection pump

Pump designation : PES4A80D410/3RS1300

EP type number : 0 410 484 015

Governor

: RSV325...1150A8C657-Governor design.

41

: 0 420 232 522 Governer no.

Customer-spec. information Customer : KHD

: F4L912 Engine

1st version kW : 51.0 : 2300 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

Test Lines : 1 680 750 014

Outside diameter

x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values __

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 1.90...2.00 Prestroke mm

: (1.85...2.05)

: 1-3-4-2

Phasing : 0-90-180-270

Rack travel in mm : 9.00...12.00

Tolerance + - 0 : 0.50 (0.75)

BASIC SETTING

Firing order

1st speed rpm: 1150

Rack travel in mm : 10.50...10.60

Del.quantity cm3/ : 5.9...6.0

100 s: (5.8...6.2)

cm3 : 0.2Spread

100 s: (0.4)

2nd speed rpm : 325.0 Rack travel in mm : 7.5...7.7

Del.quantity cm3/: 0.9...1.5 100 s: (0.7...1.6)

cm3 : 0.2Spread

100 s: (0.3)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3 rpm : 800 Speed

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 5.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1150 Speed

: 59.5...60.5 Del.quantity 1000 : (58.0...62.0)

Spread : 2.50 cm3

1000 : (4.00)

RATED SPEED

1st version

Control Lever

position degrees: 54...62

Testing:

1st rack travel in: 9.50 Speed rpm : 1190...1200

2nd rack travel in: 4.00

rpm : 1220...1250 Speed

3rd rack travel in: 4.00

Speed rpm : 1250...1280 4th rack travel in: 1420 rpm : 0.30...1.40Speed LOW IDLE 1 Control lever position degrees: 20...28 Setting point w/out bumper spring rpm : 325 Rack travel in mm: 7.1 Testing: : 100 Speed rpm Minimum rack trave: 19.50 Speed rpm: 325
Rack travel in mm: 7.50...7.70
Rack travel in mm: 2.00 : 455...515 Speed rom TORQUE CONTROL Torque control curve - 1st version rpm : 1150 1st speed Rack travel in m: 10.50...10.60 rpm : 500 2nd speed Rack travel in m: 10.80...10.90 3rd speed rpm : 880 Rack travel in m: 10.60...10.70 FUEL DELIVERY CHARACTERISTICS 1st version rpm : 750 Speed Del.quantity cm3/: 54.0...56.0 1000 s: (52.0...58.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 9.50 rpm : 1190...1200 Speed STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/ : 120.0...130.0 1000 s: (117.0...133.0) Rack travel in mm : 19.50...21.00 Remarks: : FENDT

APPLICATION

Tractor (tractor engines)

Note remarks

Test sheet : KHD 19,0 q : 12.09.86 Edition

Replaces

Test oil : ISO-4113

Combination no. : 0 400 640 113

Injection pump

Pump designation : PE12A95D610LS2453 : 0 410 690 998

EP type number

Governor

Governor design. : RQV300...1250AB1223L Governer no. : 0 420 212 092

Customer-spec. information Customer : KHD

Engine : F12L413F

1st version kW : 282.0 : 2500 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.00

Test nozzle holder

: 0 681 343 009 assembly

Openina

pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

: 2.00...2.10 Prestroke mm

: (1.95...2.15)
Rack travel in mm : 9.00...12.00

: 1- 4- 9- 8- 5-Firing order

11- 10- 3- 6- 7- 12

: 0-15-60-75-120-135-180-195-240-255-300-Phasing

315

Tolerance + - 0 : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1250

Rack travel in mm : 10.40...10.50

Del.quantity cm3/: 9.4...9.6

100 s: (9.2...9.8)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0Rack travel in mm : 6.4...6.6 Del.quantity cm3/: 1.0...1.6 100 s: (0.7...1.8)

Spread cm3 : 0.7

100 s: (0.9)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 200

: 0.70...0.80 travel mm

rpm : 500 2nd speed

: 2.60...2.80 travel mm

: 900 3rd speed rpm

: 5.60...5.80 travel mm

: 1300 4th speed rpm

travel mm : 8.60...8.70

GUIDE SLEEVE POSITION Control-lever position

Degree: -1 rpm : 1275 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1250

Speed Del.quantity 1000 : 94.0...96.0 : (92.0...98.0)

3.50 Spread cm3 : (6.00)

1000

RATED SPEED

1st version

Control lever

position degrees: 50...58

Testing:

1st rack travel in: 9.40

rpm : 1290...1300 Speed

2nd rack travel in: 4.50

Speed rpm : 1360...1390 3rd rack travel in: 0.00...1.00

4th rack travel in: 1500

Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever

position degrees: 14...22

Testing:

Speed rpm : 100 Minimum rack trave: 8.00

Speed rpm : 300

Rack travel in mm : 6.40...6.60

CONSTANT REGULATION

rpm : 375...485 Speed

TORQUE CONTROL

Dimension a mm : 0.50

Torque control curve - 1st version 1st speed rpm : 1250
Rack travel in m: 10.40...10.50
2nd speed rpm : 500
Rack travel in m: 10.90...11.00
3rd speed rpm : 790
Rack travel in m: 10.70...10.00

Rack travel in m: 10.70...10.90

4th speed rpm : 885

Rack travel in m: 10.40...10.60

START CUT-OUT

1/min : 220 (240) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 650

Del.quantity cm3/: 93.5...96.5

1000 s: (91.0...99.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.40

rpm : 1290...1300 Speed

C22

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 120.0...130.0 1000 s: (117.0...133.0)

Rack travel in mm : 13.50...14.20

Remarks:

Note remarks

Test sheet : KHD 12,7 p5 Edition : 07.02.89 : 5.8.88 Replaces : ISO-4113 Test oil

: 0 400 648 111 Combination no.

Injection pump

Pump designation : PE8A95D410LS2608 EP type number : 0 410 698 988

Governor

Governor design. : RQ300/1250AB987DL Governer no. : 0 420 202 277

Customer-spec. information Customer : KHD

: F8L413F

Engine

1st version kW : 188.0 Rated speed : 2500

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening 1

pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter

x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.00...2.10 Prestroke mm : (1.95...2.15)

Rack travel in mm : 9.00...12.00

C23

: 1- 8- 7- 2- 6- 5-4-3 Firing order

Phasing : 0-45-90-135-180-225-

270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rbm : 1250

Rack travel in mm : 10.40...10.50

Del.quantity cm3/: 9.6...9.8

100 s: (9.4...10.0)

cm3 : 0.3Spread

100 s: (0.6)

2nd speed rpm : 300.0Rack travel in mm: 6.5...6.7

Del.quantity cm3/: 0.9...1.5 100 s: (0.6...1.7)

cm3 : 0.5Spread 100 s: (0.7)

GUIDE SLEEVE POSITION Control-lever position

Degree: -1 rpm : 550

Speed Rack travel in mm : 15.60...16.40

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1250

, : 96.5...98.5 1000 : (94.5...100.5) Del.quantity

: 3.50 cm3 Spread

1000 : (6.00)

RATED SPEED

1st version

Setting point:

rom Rack travel in mm : 16.0

Testing:

1st rack travel in: 9.40

rpm : 1295...1310 Speed

2nd rack travel in: 4.00

rpm : 1335...1365 Speed

4th rack travel in: 1450 Speed rpm : 0.00...1.00LOW IDLE 1 Setting point w/out bumper spring Speed rpm : 300 Rack travel in mm: 6.0 Testing: Speed : 100 rpm Minimum rack trave: 7.50 Speed rpm : 300 Rack travel in mm : 5.90...6.10 Rack travel in mm: 2.00 : 345...385 Speed rpm : 550 Speed rpm Maximum rack trave: 1.00 TORQUE CONTROL Dimension a mm : 0.25 Torque control curve - 1st version : 1250 1st speed rpm Rack travel in m: 10.40...10.50 rpm : 550 2nd speed Rack travel in m: 10.90...11.00 3rd speed rpm : 850 Rack travel in m: 10.60...10.80 4th speed rpm : 970 Rack travel in m: 10.40...10.60 FUEL DELIVERY CHARACTERISTICS 1st version : 650 Speed rpm Del.quantity cm3/: 95.0...98.0 1000 s: (92.5...95.5) RACK STOP ADJUSTMENT Speed : 600 rpm BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 9.40 rpm : 1295...1310 Speed

Speed rpm: 300
Rack travel in mm: 6.50...6.70
Del.quantity cm3/: 9.0...15.0
1000 s: (6.5...17.5)
Spread cm3: 5.50
1000 s: (7.50)

Remarks:

Speed

LOW IDLE

STARTING FUEL DELIVERY

rpm : 100

1000 s: (117.0...133.0)

Del.quantity cm3/: 120.0...130.0

Note remarks

Test sheet : KHD 12,7 p2 : 07.02.89 Edition Replaces : 18.9.87

Test oil : ISO-4113

Combination no. : 0 400 648 141

Injection pump

Pump designation : PE8A95D410LS2608 EP type number : 0 410 698 988

Governor

Governor design. : RQV300...1250AB1195L

: 0 420 212 172 Governer no.

Customer-spec. information Customer : KHD

: F8L413F Engine

1st version kW : 188.0 : 2500 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Openina

: 172...175 pressure, bar

Test lines : 1 680 750 014

Outside diameter

x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ___

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.00...2.10 : (1.95...2.15)

Rack travel in mm : 9.00...12.00

: 1-8-7-2-6-5-Firing order

Phasing : 0-45-90-135-180-225-

270-315

Tolerance + - 0 : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1250

Rack travel in mm : 10.40...10.50

Del.quantity cm3/: 9.6...9.8

100 s: (9.4...10.0)

cm3 : 0.3Spread

100 s: (0.6)

rpm : 300.0 2nd speed Rack travel in mm: 6.5...6.7 Del.quantity cm3/: 0.9...1.5 100 s: (0.6...1.7)

cm3 : 0.5Spread 100 s: (0.7)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm : 1.20...1.30 2nd speed rpm : 500

2.80...3.00 travel mm rpm : 1000 3rd speed

: 6.50...6.70 rpm : 1290 travel mm

4th speed

: 8.60...8.80 travel mm rpm : 1375 5th speed

: 9.40...9.60 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

Speed rpm : 1275 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1250 Speed

Del.quantity : 90.3....0... 1000 : (94.5...100.5)

Spread

: 3.50 cm3 1000 : (6.00)

RATED SPEED

1st version Control Lever

position degrees: 47...55

Testing:

1st rack travel in: 9.40

Speed rpm : 1290...1300 2nd rack travel in: 4.50

rpm : 1360...1390 Speed

4th rack travel in: 1500

rpm : 0.30...1.00Speed

LOW IDLE 1

Control Lever

position degrees: 14...22

Rack travel in mm : 6.6

Testing:

rpm : 100 Speed Minimum rack trave: 8.00

rpm : 300

Rack travel in mm : 6.50...6.70

CONSTANT REGULATION

rpm : 375...485 Speed

TORQUE CONTROL

Dimension a mm : 0.50

Torque control curve - 1st version

1st speed rpm : 1250

Rack travel in m: 10.40...10.50

2nd speed rpm : 500

Rack travel in m: 10.90...11.00

3rd speed rpm : 850

Rack travel in m: 10.60...10.80

rpm : 950 4th speed

Rack travel in m: 10.40...10.60

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 650 Del.quantity cm3/ : 95.0...98.0 1000 s: (92.5...100.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.40

rpm : 1290...1300 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 120.0...130.0 1000 s: (117.0...133.0)

Remarks:

:

C26

Note remarks

Test sheet : KHD 12,7 p6
Edition : 07.02.89
Replaces : 30.9.88
Test oil : ISO-4113

Combination no. : 0 400 648 142

Injection pump

Pump designation : PE8A95D410LS2608 EP type number : 0 410 698 988

Governor

Governor design. : RQV350...1250AB990-1

Governer no. : 0 420 212 182

Customer—spec. information Customer : KHD

Engine : F8L413F

1st version kW : 174.0 Rated speed : 2500

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Opening

pressure, bar : 172...175

Test Lines : 1 680 750 014

Outside diameter x Wall thickness

x Length mm : 6.00x2.00x600

(A) Injection pump setting values Insp. Values in parentheses Set equal delivery quant. per values

(0.00

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.00...2.10

: (1.95...2.15)

Rack travel in mm : 9.00...12.00 Firing order : 1-8-7-2-6-5-4-3

Phasing : 0-45-90-135-180-225-

270-315 Tolerance + - 0 : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1225

Rack travel in mm : 10.00...10.10

Del.quantity cm3/: 8.9...9.1

100 s: (8.7...9.3)

Spread cm3: 0.3

100 s: (0.6)

2nd speed rpm : 350.0
Rack travel in mm : 6.4...6.6
Del.quantity cm3/: 0.9...1.5
100 s: (0.6...1.7)
Spread cm3 : 0.5

100 s: (0.7)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 350

travel mm : 1.20...1.30
2nd speed rpm : 600
 travel mm : 3.80...4.00
3rd speed rpm : 900
 travel mm : 5.20...5.50

4th speed rpm : 1315

travel mm : 9.30...9.70

GUIDE SLEEVE POSITION

Control-lever position
Degree: -1

Speed rpm: 1225

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1225

Del.quantity : 89.0...91.0 1000 : (87.0...93.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version Control lever

position degrees: 61...69

Testing:

1st rack travel in: 9.00

rpm : 1265...1275 Speed

2nd rack travel in: 4.00

rpm : 1300...1330 Speed

4th rack travel in: 1450

Speed rpm : 0.00...1.00

LOW IDLE 1 Control Lever

position degrees: 9...17

Testina:

Speed : 100 rpm Minimum rack trave: 8.00 rpm : 350 Speed

Rack travel in mm : 6.40...6.60

CONSTANT REGULATION

rpm : 370...480 Speed

TORQUE CONTROL

Dimension a mm : 0.40

Torque control curve - 1st version 1st speed rpm : 1225

Rack travel in m: 10.00...10.10

rpm : 500 2nd speed

Rack travel in m: 10.40...10.50

3rd speed rpm : 970

Rack travel in m: 10.20...10.40

4th speed rpm : 1080

Rack travel in m: 9.80...10.00

START CUT-OUT

Speed 1/min : 270 (290)

FUEL DELIVERY CHARACTERISTICS

1st version

rpm : 700 Speed

Del.quantity cm3/: 90.5...93.5 1000 s: (88.0...96.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.00

rpm : 1265...1275 Speed

C28

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 120.0...130.0 1000 s: (117.0...133.0) Rack travel in mm : 14.70...15.30

Remarks:

Note remarks

: KHD 15,8 L : 07.02.89 Test sheet Edition : 5.84 Replaces

: ISO-4113 Test oil

Combination no. : 0 400 649 196

Injection pump

Pump designation : PE10A95D610/4LS2452

: 0 410 699 998 EP type number Governor Governor design. : RQV750AB996L : 0 420 212 091 Governer no.

Customer-spec. information Customer : KHD

: F10L413F Engine

: 162.0 1st version kW : 1500 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening .

pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter x Wall thickness

x Length mm

: 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY Test pressure, bar: 25...27

: 2.00...2.10 Prestroke mm : (1.95...2.15)

Rack travel in mm : 9.00...12.00

D01

: 1-10- 9- 4- 3- 6-5- 8- 7- 2 Firing order

: 0-27-72-99-144-171-Phasing

216-243-288-315 : 0.50 (0.75) Tolerance + - 0

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 710

Rack travel in mm : 10.00...10.10

Del.quantity cm3/: 9.6...9.8

100 s: (9.4...10.0)

cm3 : 0.3Spread

100 s: (0.6)

rpm : 300.0 2nd speed Rack travel in mm : 5.6...5.8 Del.quantity cm3/: 0.4...0.9

100 s: (0.1...1.1)

Spread cm3 : 0.3100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -1 rpm : 760 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 710 Speed

: 96.0...98.0 Del.quantity

1000 : (94.0..100.0) cm3 : 3.00 Spread ± (6.00)

1000

RATED SPEED

1st version

Setting point:

Speed : 760 rom Rack travel in mm: 16.5

Testing:

1st rack travel in: 9.70

rpm : 750...755 Speed

2nd rack travel in: 4.00

rpm : 773...788 Speed

START CUT-OUT

Speed 1/min: 660 (680)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 9.70 Speed rpm : 750...755

STARTING FUEL DELIVERY

Remarks:

Check electrically unlatched starting fuel delivery (EES) with 24 volt.

On activation of the starting solenoid, the start position must be reached.

APPLICATION

Compressor

Generator set

Note remarks

: MAN 15,0 d1 Test sheet : 10.02.89 Edition

Replaces : 4.86 : ISO-4113 Test oil

Combination no. : 0 400 649 240

Injection pump

Pump designation : PE10A95D520/5LS2604

EP type number : 0 410 699 993

Governor

Governor design. : RQV250...1150AB1189R

Governer no. : 0 420 213 102

Customer-spec. information Customer : MAN

: D2840 ME Engine

: 270.0 1st version kW : 2300 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Openina

pressure, bar : 172...175

: 1 680 750 003 Test Lines

Outside diameter x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 1.70...1.80 Prestroke mm

: (1.65...1.85)

Rack travel in mm : 9.00...12.00

003

: 10- 9- 4- 1- 8- 7-Firing order

6-3-5-2

: 0-45-72-117-144-189-216-261-288-333 Phasing

: 0.50 (0.75)

Tolerance + - 0

Time to cyl. no. : 10

BASIC SETTING

1st speed rpm: 1150

Rack travel in mm : 13.00...13.10

Del.quantity cm3/: 12.8...13.0

100 s: (12.2...12.8)

Spread cm3 : 0.3

100 s: (0.6)

rpm : 250.02nd speed Rack travel in mm: 6.9...7.1 Del.quantity cm3/: 1.0...1.6

100 s: (0.7...1.8)

Spread cm3 : 0.3100 s: (0.5)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 350

: 2.00...2.50 travel mm

rpm : 850 2nd speed

: 5.75...6.00 travel mm

3rd speed : 1150 rpm

travel mm : 7.50...7.90

: 1300 4th speed mqn : 9.25...9.75 travel mm

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

rpm : 1230Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

: 1150 Speed rpm

Speed Del.quantity 1000 128.0...130.0

: (122.5...128.5) : 3.50

Spread cm3

: (6.00) 1000

RATED SPEED

1st version Control lever

position degrees: 58...66

Testing:

1st rack travel in: 12.00 Speed rpm : 1190...1200

2nd rack travel in: 4.00

rpm : 1280...1310 Speed

4th rack travel in: 1400

rpm : 0.00...1.00 Speed

LOW IDLE 1 Control lever

position degrees: 8...16

Testing:

Speed rpm : 100 : 250 Speed rpm

Rack travel in mm : 6.90...7.10

Rack travel in mm : 2.00

Speed rpm : 400...460

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1150

Rack travel in m: 13.00...13.10

2nd speed rpm : 500

Rack travel in m: 13.00...13.20

START CUT-OUT

1/min: 170 (190) Speed

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 12.00

rpm : 1190...1200 Speed

STARTING FUEL DELIVERY

: 100 Speed rpm

Rack travel in mm : 15.90...16.50

Remarks:

Note remarks

Test sheet : KHD 12,7 r1 : 07.02.89 Edition

Replaces

Test oil : ISO-4113

Combination no. : 0 400 678 040

Injection pump

Pump designation : PE8A95D410LS2451 EP type number : 0 410 698 992

Governor

: RSV300...1325A8C1002 Governor design.

: 0 420 232 310 Governer no.

Customer-spec. information Customer : KHD

: F8L413F Engine

1st version kW : 188.0 Rated speed : 2650 : 157.0 2nd version : 2300 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Openina

: 172...175 pressure, bar

: 1 680 750 014 Test lines

Outside diameter x Wall thickness

x Length mm : 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.00...2.10 : (1.95...2.15) Prestroke mm

Rack travel in mm : 9.00...12.00 : 1- 8- 7- 2-4- 3 6- 5-Firing order

: 0-45-90-135-180-225-Phasina

270-315

: 0.50 (0.75) Tolerance + - 0

Time to cyl. no. : 1

BASIC SETTING

rpm: 1325 1st speed

Rack travel in mm : 9.70...9.80

Del.quantity cm3/: 9.1...9.3

100 s: (8.9...9.5)

Spread cm3 : 0.3

100 s: (0.6)

rpm : 300.02nd speed Rack travel in mm: 5.9...6.1 Del.quantity cm3/: 0.9...1.5 100 s: (0.6...1.7)

cm3 : 0.5 Spread 100 s: (0.9)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800

Rack travel in mm : 0.30...1.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1325

: 91.5...93.5 Del.quantity 1000 : (89.5...95.5)

: 3.00 Spread cm3 1000 : (6.00)

2nd version

Speed rpm : 1150 Del.quantity cm3/ : 83.0...85.0 1000 s: (81.0...87.0)

: 3.00 cm3 Spread

1000 s: (3.00)

RATED SPEED

1st version

Control lever position degrees: 59...67 Testing: 1st rack travel in: 8.70 Speed rpm: 1365...1375 2nd rack travel in: 4.00 Speed rpm : 1390...1420 4th rack travel in: 1575 rpm : 0.30...1.70Speed LOW IDLE 1 Control lever position degrees: 16...24 Setting point w/out bumper spring Speed rpm : 300 Rack travel in mm: 6.0 Testing: rpm : 100 Speed Minimum rack trave: 19.00 rpm : 300 Speed Rack travel in mm : 5.90...6.10
Rack travel in mm : 2.00
Speed rpm : 310...370
Speed rpm : 700 Maximum rack trave: 1.00 SET IDLE AUXILIARY SPRING Rack travel in mm: 2.00 TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1325 Rack travel in m: 9.70...9.80 2nd speed rpm : 500 Rack travel in m: 10.00...10.10 BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 8.70 rpm : 1365...1375 Speed STARTING FUEL DELIVERY : 100 Speed mgr Del.quantity cm3/: 116.5...127.5 1000 s: (113.5...130.5) Rack travel in mm: 14.00...14.40 HIGH IDLE 1st version Rack travel in mm : 3.90...4.10 Spread cm3 : 10.00

Remarks:

006

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : MB 3,8 q Edition : 10.02.89 Replaces Test oil : ISO-4113 Combination no. : 0 400 844 048 Injection pump Pump designation : PES4A90D410RS2294 EP type number : 0 410 894 011 Governor Governor design. : RQV300...1425AB780L Governer no. : 0 420 212 045 Customer-spec. information Customer : DAIMLER-BENZ : OM 314 Engine 1st version kW : 64.0 : 2850 Rated speed TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 417 413 000 Inlet press., bar: 1.50 Test nozzle holder assembly : 0 681 343 009 Openina pressure, bar : 172...175 Test Lines : 1 680 750 014 Outside diameter x Wall thickness : 6.00X2.00X600 x Length mm (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values BEGINNING OF DELIVERY Test pressure, bar: 25...27

> : 2.15...2.25 : (2.10...2.30)

Rack travel in mm : 9.00...12.00

: 1-3-4-2 Firing order : 0-90-180-270 Phasing Tolerance + - ° : 0.50 (0.75) BASIC SETTING 1st speed rpm : 1400 Rack travel in mm : 9.70...9.80 Del.quantity cm3/: 6.3...6.4 100 s: (6.1...6.6) Spread cm3 : 0.3100 s: (0.4) 2nd speed rpm : 300.0 Rack travel in mm : 7.5...7.7 Del.quantity cm3/: 0.9...1.5 100 s: (0.7...1.7) cm3 : 0.2 Spread 100 s: (0.4) (B) Setting of injection pump with governor GUIDE SLEEVE TRAVEL rpm : 1460 1st speed travel mm : 8.40...8.60 950 2nd speed rpm 5.20...5.50 travel mm 3rd speed 775 rpm 4.10...4.60 travel mm 550 4th speed rpm : 2.70...3.00 : 300 travel mm 5th speed rpm : 0.70...1.20 travel mm GUIDE SLEEVE POSITION Control-lever position Degree: -1 rpm : 1420 Speed Rack travel in mm : 15.20...17.80 FULL LOAD DELIV. AT FULL LOAD STOP 1st version : 1400 Speed rpm : 63.5...64.5 Del.quantity : (61.5...66.5) 1000 Spread 3.00 cm3 : (4.50) 1000 RATED SPEED

D07

Prestroke mm

1st version Control lever

position degrees: 61...69

Testing:

1st rack travel in: 8.70

rpm : 1460...1470 Speed

2nd rack travel in: 4.00

Speed rpm : 1540...1570

LOW IDLE 1 Control Lever

position degrees: 11...19

Testina:

: 200 Speed rpm Minimum rack trave: 8.20

Speed rpm : 300 Rack travel in mm : 7.50...7.70

CONSTANT REGULATION

rpm : 350...500 Speed

START CUT-OUT

1/min: 250 (240) Speed

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 8.70

Speed rpm : 1460...1470

INTERMEDIATE RATED SPEED

Control Lever

position degrees: 42...50 Rack travel in mm : 8.70 : 695...705 Speed rpm Rack travel in mm : 4.00 Speed man : 830...860

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 71.0...81.0

1000 s: (68.0...84.0)

Rack travel in mm : 13.70...14.30

Remarks:

Note remarks

: MB 3,8 g 5 : 07.02.89 Test sheet Edition

Replaces Test oil : ISO-4113

Combination no. : 0 400 844 055

Injection pump

Pump designation : PES4A90D410RS2294

: 0 410 894 011 EP type number

Governor

Governor design. : RQV300...1400AB836DL

: 0 420 212 050 Governer no.

Customer-spec. information

Customer : DAIMLER-BENZ

: 0M314 Engine

1st version kW : 62.0 : 2800 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Opening

pressure, bar : 172...175

Test Lines : 1 680 750 014

Outside diameter x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.15...2.25 Prestroke mm

: (2.10...2.30)

Rack travel in mm : 9.00...12.00

009

: 1-3-4-2 Firing order

Phasing : 0-90-180-270

Tolerance + - 0 : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1400

Rack travel in mm : 9.70...9.80

Del.quantity cm3/: 6.3...6.4

100 s: (6.1...6.6)

Spread cm3 : 0.3

100 s: (0.4)

2nd speed rpm : 300.0 Rack travel in mm : 7.5...7.7

Del.quantity cm3/: 0.9...1.5

100 s: (0.7...1.7)

cm3 : 0.2 Spread 100 s: (0.4)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1460

travel mm : 8.40...8.60

2nd speed rpm : 950

travel mm : 5.20...5.50

: 775 3rd speed man

: 4.10...4.60 travel mm

4th speed rpm : 550

: 2.70...3.00 : 300 travel mm

5th speed rpm

: 0.70...1.20 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1420 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1400 Speed

: 63.5...64.5 : (61.5...66.5) : 3.00 Del.quantity

1000

Spread cm3

1000 : (4.50)

RATED SPEED

1st version Control lever

position degrees: 61...69

Testing:

1st rack travel in: 8.70

Speed rpm: 1460...1470 2nd rack travel in: 4.00

rpm : 1540...1570 Speed

LOW IDLE 1 Control lever

position degrees: 11...19

Testing:

Speed rpm : 200 Minimum rack trave: 8.20

Speed rpm : 300 Rack travel in mm : 7.50...7.70

CONSTANT REGULATION

rpm : 350...500 Speed

START CUT-OUT

1/min: 220 (240) Speed

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 8.70

rpm : 1460...1470 Speed

INTERMEDIATE RATED SPEED

Control lever

position degrees: 113...121 Rack travel in mm : 8.70

Speed rpm : 1295. Rack travel in mm : 4.00 : 1295...1305

: 1395...1425 Speed rpm

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/: 71.0...81.0

1000 s: (68.0...84.0)

Rack travel in mm : 13.70...14.30

Remarks:

Note remarks

Test sheet : MB 4,0 a 12 Edition : 07.02.89

Replaces

: ISO-4113 Test oil

Combination no. : 0 400 844 094

Injection pump

Pump designation : PES4A90D410RS2666-2

EP type number : 0 410 894 033

Governor

: RQV300...1400AB1065-Governor design.

12L

Governer no. : 0 420 212 207

Customer-spec. information

Customer : DAIMLER-BENZ

: 0M364 Engine

1st version kW : 61.0 : 2800 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

: 172...175 pressure, bar

: 1 680 750 015 Test lines

Outside diameter

x Wall thickness

: 6.00X1.50X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.25...2.35 Prestroke mm

: (2.20...2.40)

Rack travel in mm : 9.00...12.00 Firing order : 1- 3- 4- 2

Phasina : 0-90-180-270

Tolerance + - 0 : 0.50 (0.75)

BASIC SETTING

rpm: 1400 1st speed

Rack travel in mm : 10.50...10.60

Del.quantity cm3/: 5.9...6.0

100 s: (5.7...6.2)

cm3 : 0.3Spread

100 s: (0.5)

rpm : 300.02nd speed Rack travel in mm: 8.6...8.8 Del.quantity cm3/: 0.8...1.2 100 s: (0.6...1.4) Spread cm3: 0.2

100 s: (0.4)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300

: 0.80...1.30 travel mm

2nd speed 500 rpm

: 2.30...2.80 : 750 travel mm

3rd speed rpm

: 4.10...4.30 : 1500 travel mm

4th speed rpm

: 8.50...8.60 travel mm

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1400 Speed

: 59.0...60.0 Del.quantity

1000 : (57.0...62.0)

: 3.00 Spread cm3 1000 : (5.00)

RATED SPEED

1st version

Control lever

position degrees: 58...66

Testing:

1st rack travel in: 9.50

: 1440...1450 Speed rom 2nd rack travel in: 4.00 rpm : 1535...1565 Speed 4th rack travel in: 1700 Speed rom : 0.00...1.00LOW IDLE 1 Control Lever position degrees: 20...28 Testing: Speed rpm : 100

Minimum rack trave: 10.20 : 300 rom

Rack travel in mm : 8.60...8.80

CONSTANT REGULATION rpm : 540...680 Speed

Dimension a mm : 1.00 Torque control curve - 1st version st speed rpm : 1400 Rack travel in m: 10.50...10.60 1st speed

rpm : 450 2nd speed Rack travel in m: 11.50...11.60 3rd speed rpm : 850

Rack travel in m: 10.90...11.10

START CUT-OUT

TORQUE CONTROL

1/min: 220 (240) Speed

FUEL DELIVERY CHARACTERISTICS

1st version rpm : 450 Speed Del.quantity cm3/: 45.0...47.0 1000 s: (42.5...49.5) rpm : 850 Speed

Del.quantity cm3/: 47.5...50.5 1000 s: (45.0...53.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 9.50 Speed rpm : 1440...1450

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 78.0...88.0 1000 s: (75.0...91.0) Rack travel in mm : 17.00...17.40 Remarks:

Set shutoff stop to contact at 3.0...3.5 mm control-rod travel.

Note remarks

: MAN 9,2 f 1 : 10.02.89 Test sheet **Fdition** Replaces : 28.8.87

: ISO-4113 Test oil

Combination no. : 0 400 845 079

Injection pump

Pump designation : PES5A95D32OLS2504

EP type number : 0 410 895 984

Governor

Governor design. : RQ250/1100AB1197R

: 0 420 201 639 Governer no.

Customer-spec. information

Customer : MAN

: D2565 MUL Engine

1st version kW : 141.0 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.00

Test nozzle holder

: 0 681 343 009 assembly

Opening |

: 172...175 pressure, bar

Test Lines : 1 680 750 014

Outside diameter

x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 1.50...1.60 Prestroke mm

: (1.45...1.65)

Rack travel in mm : 9.00...12.00

Firing order : 1-3-5-4-2

Phasing : 0-72-144-216-288

Tolerance + - 0 : 0.50 (0.75)

BASIC SETTING

rpm: 1100 1st speed

Rack travel in mm : 11.30...11.40

Del.quantity cm3/: 11.4...11.6

100 s: (11.2...11.8)

Spread cm3 : 0.3

100 s: (0.6)

rpm : 250.0 2nd speed Rack travel in mm: 6.4...6.6 Del.quantity cm3/: 1.5...2.1 100 s: (1.2...2.3)

cm3 : 0.3Spread

100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 600

Rack travel in mm : 15.60...16.40

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

: 114.0...116.0 Del.quantity 1000 : (112.0...118.0)

: 3.00 Spread cm3

1000 : (6.00)

RATED SPEED

1st version

Setting point:

rpm Rack travel in mm: 16.0

Testina:

1st rack travel in: 10.30

rpm : 1145...1160 Speed

2nd rack travel in: 4.00

Speed rpm : 1195...1225 4th rack travel in: 1300 Speed rpm : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring

rpm : 250 Speed Rack travel in mm: 6.5

Testina:

Speed : 100 rpm Minimum rack trave: 8.00

Speed rpm : 250 Rack travel in mm : 6.40...6.60

Rack travel in mm : 2.00 Speed rpm : 370...410

TORQUE CONTROL

Dimension a mm : 0.40

Torque control curve - 1st version

1st speed rpm : 1100

Rack travel in m: 11.30...11.40

2nd speed rpm : 600

Rack travel in m: 11.70...11.80

3rd speed rpm : 940

Rack travel in m: 11.50...11.70 4th speed rpm : 1015

Rack travel in m: 11.40...11.60

FUEL DELIVERY CHARACTERISTICS

1st version

: 500 Speed rpm

Del.quantity cm3/: 113.0...116.0 1000 s: (110.5...118.5)

Speed rpm : 800 Del.quantity cm3/ : 115.5...118.5 1000 s: (113.0...121.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 10.30

rpm : 1145...1160 Speed

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 147.0...157.0

1000 s: (144.0...160.0)

Rack travel in mm : 15.70...16.30

LOW IDLE

Speed rpm : 250
Rack travel in mm : 6.40...6.60
Del.quantity cm3/ : 15.0...21.0
1000 s: (12.5...23.5)

cm3 : 3.00Spread 1000 s: (5.00)

Remarks:

: MAN-NR. 2-7500

Set idle stop at 250 min -1 to a

control-rod travel of 6.5 mm

Note remarks

Test sheet : MAN 7,0 c 1
Edition : 03.03.89
Replaces : 5.9.88
Test oil : ISO-4113

Combination no. : 0 400 846 264

Injection pump

Pump designation : PES6A85D32ORS2337 EP type number : 0 410 886 921

Governor

Governor design. : RQ200/1250AB801DR Governor no. : 0 420 203 089

Customer—spec. information Customer : MAN

Engine : D0846HM42U

1st version kW : 118.0 Rated speed : 2500

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Opening

pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter x Wall thickness

x wall tilless

x Length mm : 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 1.50...1.60 : (1.45...1.65)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Filas ing . 0 00 120 100 240 30

Tolerance $+ - \circ : 0.50 (0.75)$

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm: 1250

Rack travel in mm : 10.70...10.80

Del.quantity cm3/: 7.0...7.1

100 s: (6.8...7.3)

Spread cm3: 0.3

100 s: (0.4)

2nd speed rpm : 200.0 Rack travel in mm : 8.4...8.6 Del.quantity cm3/ : 1.8...2.4

100 s: (1.6...2.6)

Spread cm3 : -

100 s: (0.4)

GUIDE SLEEVE POSITION Control-lever position

Degree: -2 ed rpm : 550

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm: 1250

Del.quantity : 70.0...71.0 1000 : (68.0...73.0)

Spread cm3 : 3.00

1000 : (4.50)

RATED SPEED

1st version

Setting point:

Speed rpm : 550 Rack travel in mm : 20.0

Testing:

1st rack travel in: 9.75

Speed rpm : 1295...1310

2nd rack travel in: 4.00

Speed rpm : 1325...1355

015

LOW IDLE 1 Setting point w/out bumper spring rpm : 200 Speed Rack travel in mm: 8.5 Testina: Speed rpm : 100 Minimum rack trave: 9.90 rpm : 200 Speed Rack travel in mm : 8.40...8.60 Rack travel in mm : 2.00 Speed rpm : 340...380 TORQUE CONTROL Dimension a mm : 0.30 Torque control curve - 1st version 1st speed rpm : 1250 Rack travel in m: 10.70...10.80 2nd speed rpm : 500 Rack travel in m: 11.40...11.50 4th speed rpm : 1000
Rack travel in m: 11.40...11.50
Sth speed rpm : 1125
Rack travel in m: 10.90...11.10 FUEL DELIVERY CHARACTERISTICS 1st version : 500 Speed rpm Del.quantity cm3/: 0.0...69.5 1000 s: (0.0...72.0) Speed rpm : 800 Del.quantity cm3/: 69.0...72.0 1000 s: (66.5...74.5) RACK STOP ADJUSTMENT Speed : 200 rpm **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 9.75 Speed rpm : 1295...1310 STARTING FUEL DELIVERY : 100 Speed rpm Del.quantity cm3/: 123.0...133.0 1000 s: (120.0...136.0) Rack travel in mm : 18.10...18.50

: MAN-NR.1-7504

APPLICATION

Omnibus

D16

Remarks:

Note remarks

Test sheet

: KHD 9,6 k 6

Edition

: 11.11.88

Replaces

Test oil

: ISO-4113

Combination no.

: 0 400 846 432

Injection pump

Pump designation : PES6A95D410RS2416

EP type number

: 0 410 896 961

Governor

Governor design. : RQ750AB1240L Governer no.

: 0 420 200 110

Customer-spec. information

Customer

: KHD

Engine

: F6I 413FR

1st version kW

: 122.0

Rated speed

: 1500

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C

: 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.50

Test nozzle holder

assembly

: 0 681 343 009

Openina (

pressure, bar

: 172...175

Test lines

: 1 680 750 014

Outside diameter

x Wall thickness

x Length mm

: 6.00X2.00X-600

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm

: 1.90...2.00

: (1.85...2.05)

Rack travel in mm : 9.00...12.00

D17

Firing order

: 1-5-3-6-2-4

Phasing

: 0-60-120-180-240-300

Tolerance + - 0

: 0.50 (0.75)

BASIC SETTING

1st speed

rpm : 700

Rack travel in mm : 10.40...10.50

Del.quantity cm3/ : 10.1...10.3

100 s: (9.9...10.5)

Spread

cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 250.0 Rack travel in mm : 5.3...5.5

Del.quantity cm3/: 1.0...1.6

100 s: (0.7...1.8)

Spread

cm3 : 0.3100 s: (0.5)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

rpm : 700

Del.quantity

: 101.0...103.0 : (99.0...105.0)

Spread

1000 : 3.50 cm3

1000 : (6.00)

RATED SPEED

1st version

Testing:

1st rack travel in: 9.40

Speed rpm : 750...755

2nd rack travel in: 3.70 Speed rpm: 780...785

TORQUE CONTROL

START CUT-OUT

Dimension a mm

Torque control curve - 1st version

1st speed rpm : 700

Rack travel in m: 10.40...10.50 ad speed rpm : 500

2nd speed

Rack travel in m: 10.40...10.60

Speed

1/min: 640 (660)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 9.40 Speed rpm : 750...755 Speed

STARTING FUEL DELIVERY

Remarks:

APPLICATION

Generator set

Note remarks

Test sheet : KHD 9,6 p 1 Edition : 09.03.87

Replaces

Test oil : ISO-4113

Combination no. : 0 400 846 433

Injection pump

Pump designation : PES6A95D410RS2416

EP type number : 0 410 896 961

Governor

Governor design. : RQ900AB1054L Governer no. : 0 420 200 064

Customer-spec. information Customer : KHD

Engine : F6L413FR

1st version kW : 106.0 Rated speed : 1800

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.00

Test nozzle holder

assembly : 0 681 343 009

Opening

pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter

x Wall thickness

x Length mm : 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ___

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 1.90...2.00 Prestroke mm

: (1.85...2.05)

Rack travel in mm : 9.00...12.00

Phasing

: 0-60-120-180-240-300

: 1-5-3-6-2-4

Tolerance + - °

Firing order

: 0.50 (0.75)

BASIC SETTING

1st speed

rpm: 850

Rack travel in mm : 9.00...9.10

Del.quantity cm3/: 8.5...8.7

100 s: (8.3...8.9)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 250.0 Rack travel in mm : 5.6...5.8

Del.quantity cm3/: 0.9...1.5

100 s: (0.6...1.7)

cm3 : 0.3Spread

100 s: (0.5)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 850 Speed Del.quantity 10<u>0</u>0 Speed

: 85.5...87.5 : (83.5...89.5)

: 3.00 Spread cm3

1000 : (6.00)

RATED SPEED

1st version

Testing:

1st rack travel in: 8.60

Speed rpm : 900...905 2nd rack travel in: 3.50 Speed rpm : 930...940

START CUT-OUT

1/min: 810 (830) Speed

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 8.60

rpm : 900...905 Speed

STARTING FUEL DELIVERY

Remarks:

APPLICATION

Generator set

Note remarks

: DAF 6,2 p 2 : 07.02.89 Test sheet Edition : 30.5.88 Replaces

Test oil : ISO-4113

Combination no. : 0 400 846 538

Injection pump

Pump designation : PES6A95D32ORS2693 : 0 410 896 914 EP type number

Governor

Governor design. : RQ300/1300AB1204R

: 0 420 201 640 Governer no.

Customer-spec. information

: DAF Customer

Engine : DNT 620

: 130.0 1st version kW : 2600 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Openina

pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter x Wall thickness

: 6.00x1.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.00...2.10 Prestroke mm : (1.95...2.15)

Rack travel in mm : 7.50...10.50

Firing order : 1-5-3-6-2-4

: 0-60-120-180-240-300 Phasing

Tolerance + - 0 : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 8.50...9.50 & maximum rack tra: 21.00

Difference ° CS : 2.50...3.50

BASIC SETTING

rpm: 850 1st speed

Rack travel in mm : 0.90...1.00

Del.quantity cm3/: 7.7...7.8

100 s: (7.5...8.0)

cm3 : 0.3Spread

100 s: (0.6)

rpm : 300.02nd speed

Rack travel in mm : 6.5...6.7 Del.quantity cm3/: 0.7...1.1

100 s: (0.4...1.3)

cm3 : 0.3Spread

100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -2

rpm : 850 Speed

Rack travel in mm : 16.80...18.40

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 850

Aneroid pressure h: 700

Del.quantity : 77.5...78.5 1000 : (75.5...80.5) Spread cm3 : 3.50 1000 : (6.00)

RATED SPEED

1st version

Setting point:

Speed rpm

Rack travel in mm : 17.6

Testing: 1st rack travel in: 9.70 Speed rpm : 1350...1365 2nd rack travel in: 4.00 rpm : 1420...1450 Speed 4th rack travel in: 1550 rom : 0.00...1.00Speed LOW IDLE 1 Setting point w/out bumper spring rpm : 300 Rack travel in mm : 6.6 Testing: Speed rpm : 100 Minimum rack trave: 7.60 rpm : 300 Speed Rack travel in mm : 6.50...6.70 Rack travel in mm : 2.00 rpm : 545...585 Speed TORQUE CONTROL Dimension a mm : 0.55 Torque control curve - 1st version rpm : 1290 1st speed Rack travel in m: 9.60...9.70 rpm : 850 2nd speed Rack travel in m: 11.20...11.40

3rd speed rpm : 935

Rack travel in m: 10.80...11.10

4th speed rpm : 1080

Rack travel in m: 10.60...11.00 Aneroid/Altitude Compensator Test 1st version Setting : 600 Speed rpm Pressure hPa : 700 Rack travel mm : 11.50...11.60 Measurement 1/min: 600 Speed 1st pressure hPa :-Rack travel in m: 11.20...11.40 2nd pressure hPa : 250 Rack travel in m: 11.40...11.50 START CUT-OUT 1/min : 220 (240) Speed FUEL DELIVERY CHARACTERISTICS 1st version

D22

Aneroid pressure h: 700 Speed rpm : 1290 Del.quantity cm3/ : 73.0...75.0 1000 s: (70.5...77.5) Aneroid pressure h: rpm : 600 Speed Del.quantity cm3/: 65.0...67.0 1000 s: (63.0...69.0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 9.70 rpm : 1350...1365 STARTING FUEL DELIVERY Speed : 100 rpm Del.quantity cm3/: 130.0...145.0 1000 s: (127.0...148.0) Rack travel in mm : 19.50...21.00

LOW IDLE

Speed rpm : 300
Rack travel in mm : 6.50...6.70
Del.quantity cm3/ : 7.0...11.0
1000 s: (4.5...13.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

When adjusting the governor, observe service information on microcard W-400/008.

Note remarks

: MWM 3,1 b 2 Test sheet Edition : 10.02.89 : 12.1.89 Replaces

Test oil : ISO-4113

Combination no. : 0 400 863 008

Injection pump

Pump designation : PES3A90D320/3RS2658

EP type number : 0 410 893 004

Governor

: RSV325...1500A2C505-Governor design.

3R

: 0 420 233 229 Governer no.

Customer-spec. information

Customer : MWM

: D226B-3 Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.50

Test nozzle holder

assembly : D 681 343 009

Opening

pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.95...3.05 Prestroke mm

: (2.90...3.10)

Rack travel in mm: 9.00...12.00 Firing order: 1-2-3

Phasing : 0-120-240

Tolerance + - ® : 0.50 (0.75)

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00 & maximum rack tra: 21.00 Difference ° CS : 3.50...4.50

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 11.20...11.30

Del.quantity cm3/: 8.9...9.0

100 s: (8.7...9.2)

cm3 : 0.3Spread

100 s: (0.5)

2nd speed rpm : 325.0 Rack travel in mm : 9.7...9.9

Del.quantity cm3/: 4.6...5.2 100 s: (4.4...5.4) Spread cm3: 0.2

100 s: (0.4)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3 Speed rpm: 800 Rack travel in mm: 0.30...0.70

Governor spring pre-tension Click setting x : 2.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

: 89.5...90.5 : (87.5...92.5) Del.quantity 1000

: 3.00

Spread cm3 : (5.00)

1000

RATED SPEED

1st version

Control lever

position degrees: 39...47

Testing:

1st rack travel in: 10.20 Speed rpm : 1140...1150

2nd rack travel in: 4.00 rpm : 1180...1210 Speed 3rd rack travel in: 4.00 rpm : 1210...1240 Speed 4th rack travel in: 1375 rpm : 0.30...1.40 Speed

LOW IDLE 1 Control lever

position degrees: 13...21

Setting point w/out bumper spring

Speed rpm : 325 Rack travel in mm : 9.3 Speed rpm : 325
Rack travel in mm : 9.70...9.90
Rack travel in mm : 2.00

rpm : 480...540 Speed

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1100
Rack travel in m: 11.20...11.30

rpm : 500 2nd speed

Rack travel in m: 11.20...11.40

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 10.20

rpm : 1140...1150 Speed

STARTING FUEL DELIVERY

Remarks:

Note remarks

: KHD 1 g 31 : 22.05.87 Test sheet Edition : 9.3.87 Replaces : ISO-4113 Test oil

Combination no. : 0 400 864 069

Injection pump

Pump designation : PES4A85D410/3RS2732

EP type number : 0 410 884 947

Governor

: RSV325...1175A8C2163 Governor design.

-3L

: 0 420 232 474 Governer no.

Customer-spec. information Customer : KHD

Engine : F4L913

1st version kW : 55.0 : 2350 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.00

Test nozzle holder

assembly : 0 681 343 009

Openina

pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter

x Wall thickness

x Length mm : 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY Test pressure, bar: 25...27

Prestroke mm : 2.50...2.60

: (2.45,..2.65)

Rack travel in mm : 9.00...12.00

Firing order : 1-3-4-2

Phasing : 0-90-180-270

Tolerance + - 0 : 0.50 (0.75)

BASIC SETTING

1st speed rpm: 1175

Rack travel in mm : 9.80...9.90

Del.quantity cm3/: 6.7...6.8

100 s: (6.5...7.0)

cm3 : 0.3Spread

100 s: (0.4)

rpm : 325.0 2nd speed Rack travel in mm: 6.3...6.5 Del.quantity cm3/: 1.0...1.6

100 s: (0.8...1.8)

cm3 : 0.2Spread 100 s: (0.4)

GUIDE SLEEVE POSITION Control-lever position Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 4.25

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

rpm : 1175 : 67.0...68.0 Del.quantity 1000 : (65.0...70.0)

Spread cm3 : 3.00

1000 : (4.50)

RATED SPEED

1st version Control lever

position degrees: 53...61

Testing:

1st rack travel in: 8.80

Speed rpm : 1215...1225

2nd rack travel in: 4.00

: 1235...1265 Speed rpm

3rd rack travel in: 4.00

Speed rpm : 1255...1285 4th 7ack travel in: 1420

rpm : 0.30...1.40 Speed

LOW IDLE 1 Control Lever

position degrees: 15...23

Setting point w/out bumper spring

Speed rpm : 325 Rack travel in mm : 5.6

Testing:

Speed rpm : 100 Minimum rack trave: 19.50 : 325 rom

Rack travel in mm : 5.90...6.10

Rack travel in mm : 2.00

: 460...520 Speed rpm

TORQUE CONTROL

Torque control curve - 1st version

rpm : 1175 1st speed

Rack travel in m: 9.80...9.90
2nd speed rpm : 500
Rack travel in m: 10.30...10.40

3rd speed rpm : 800

Rack travel in m: 10.20...10.30

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 800 Del.quantity cm3/: 58.0...60.0 1000 s: (55.5...62.5)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 8.80

rpm : 1215...1225 Speed

STARTING FUEL DELIVERY

: 100 Speed rpm

Del.quantity cm3/: 120.0...130.0

1000 s: (117.0...133.0)

Rack travel in mm : 17.10...17.30

Remarks:

: TKS 2.80

APPLICATION

Tractor (tractor engines)

026

Note remarks

Test sheet : FOR 5,9 f 5 Edition : 27.03.87

Replaces

Test oil : ISO-4113

Combination no. : 0 400 866 109

Injection pump

Pump designation : PES6A90D210RS2629 : 0 410 896 075

EP type number Governor

: RSV350...1300A0C2139 Governor design.

: 0 420 232 374 Governer no.

Customer-spec. information Customer : FORD/GB

: 380 Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.00

Test nozzle holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter x Wall thickness

x Length mm : 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.70...2.80 Prestroke mm : (2.65...2.85)

Rack travel in mm : 9.00...12.00

Firing order : 1-5- 3- 6- 2-

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm: 1250

Rack travel in mm : 12.90...13.00

Del.quantity cm3/ : 7.2...7.3

100 s: (7.0...7.5)

cm3 : 0.3Spread

100 s: (0.4)

rpm : 350.0 2nd speed Rack travel in mm : 6.4...6.5 Del.quantity cm3/ : 0.9...1.3

100 s: (0.7...1.5)

cm3 : 0.2Spread 100 s: (0.4)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800

Rack travel in mm : 0.30...1.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1250

Del.quantity : 72.0...73.0 1000 : (70.0...75.0)

: 3.00 Spread cm3

1000 : (4.50)

RATED SPEED

1st version

Control Lever

position degrees: 64...72

Testing:

1st rack travel in: 11.90

Speed rpm : 1365...1375

2nd rack travel in: 4.00

rpm : 1480...1510 Speed

3rd rack travel in: 4.00

Speed rpm : 1505...1535 4th rack travel in: 1670

rpm : 0.30...1.70 Speed

LOW IDLE 1 Control Lever

position degrees: 30...38
Setting point w/out bumper spring
Speed rpm : 350

Rack travel in mm: 6.0

Testing:

Speed rpm : 100 Minimum rack trave: 19.00 rpm : 350 Speed

Rack travel in mm : 6.40...6.60

Rack travel in mm: 2.00 Speed rpm: 515...575 Speed rpm: 650 Maximum rack trave: 1.00

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 11.90

Speed rpm : 1365...1375

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 76.0...90.0 1000 s: (73.0...93.0)

Rack travel in mm : 19.00...21.00

Remarks:

At start of delivery, locating pin must latch into slit in pointer.

Note remarks

Test sheet : KHD 1 g 24 : 07.02.89 : 9.3.87 Edition Replaces

Test oil : ISO-4113

Combination no. : 0 400 866 118

Injection pump

Pump designation : PES6A85D410/3RS2611

EP type number : 0 410 886 902

Governor

Governor design. : RSV325...1150A8C604L Governer no. : 0 420 232 319

Customer-spec. information Customer : KHD

: F6L913 Engine

1st version kW : 78.0 : 2300 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.00

Test nozzle holder

: 0 681 343 009 assembly

Opening

: 172...175 pressure, bar

Test lines : 1 680 750 014

Outside diameter x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.50...2.60

: (2.45...2.65)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

: 0-60-120-180-240-300 Phasing

Tolerance + - 0 : 0.50 (0.75)

BASIC SETTING

1st speed rpm: 1150

Rack travel in mm : 10.20...10.30

Del.guantity cm3/: 6.0...6.1

100 s: (5.8...6.3)

cm3 : 0.3Spread

100 s: (0.5)

rpm : 325.0 2nd speed Rack travel in mm: 8.4...8.6

Del.quantity cm3/: 1.0...1.6 100 s: (0.8...1.8) cm3 : 0.2

Spread 100 s: (0.4)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3 rpm : 800

Speed Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 4.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150

Del.quantity : 60.5...61.5 1000 : (58.5...63.5)

: 3.00 Spread cm3

: (5.00) 1000

RATED SPEED

1st version Control lever

position degrees: 49...57

Testing:

1st rack travel in: 9.20 rpm : 1190...1200 Speed

2nd rack travel in: 4.00

rpm : 1215...1245 Speed

3rd rack travel in: 4.00

Speed : 1240...1270 rpm

F01

4th rack travel in: 1400 rpm : 0.30...1.40 Speed LOW IDLE 1 Control lever position degrees: 13...21 Setting point w/out bumper spring Speed rpm : 325 Rack travel in mm : 8.0 Testing: Speed rpm : 100 Minimum rack trave: 19.50 rpm : 325 Speed Rack travel in mm : 8.40...8.60 Rack travel in mm : 2.00 Speed : 440...500 rom TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1150 Rack travel in m: 10.20...10.30 2nd speed rpm : 500 Rack travel in m: 10.20...10.40 FUEL DELIVERY CHARACTERISTICS 1st version : 500 Speed rpm Del.quantity cm3/: 39.5...41.5 1000 s: (37.0...44.0) : 800 Speed rpm Del.quantity cm3/: 48.0...50.0 1000 s: (45.5...52.5) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 9.20 rpm : 1190...1200 Speed STARTING FUEL DELIVERY rpm : 100 Speed Del.quantity cm3/: 120.0...130.0 1000 s: (117.0...133.0) Rack travel in mm: 19.50...21.00 Remarks:

Note remarks

Test sheet : CUM 8,3 k 2 Edition : 15.06.88

Replaces

Test oil : ISO-4113

: 0 400 866 124 Combination no.

Injection pump

Pump designation : PES6A100D320/3RS2691

EP type number : 9 410 230 025

Governor

: RSV400...1250A0C2216 Governor design.

-2R

Governer no. : 0 420 233 217

Customer-spec. information Customer : C.D.C.

: 6 CT 830 Engine

: 160.0 1st version kW Rated speed : 2500

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 017 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

: 1 680 750 014 Test lines

Outside diameter

x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

: 2.80...2.90 Prestroke mm : (2.75...2.95) Rack travel in mm : 10.50

: 1-5-3-6-2-4 Firing order

Phasing : 0-60-120-180-240-300

Tolerance + - 0 : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1250

Rack travel in mm : 12.00...12.10

Del.quantity cm3/: 12.1...12.3

100 s: (11.9...12.5)

cm3 : 0.3Spread

100 s: (0.6)

rpm : 400.0 2nd speed

Rack travel in mm : 5.7...5.9 Del.quantity cm3/: 1.6...2.0

100 s: (1.3...2.2)

cm3 : 0.3Spread

100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800 Speed

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1250

: 121.0...123.0 Del.quantity 1000 : (119.0...125.0)

: 3.50 Spread cm3

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 58...66

Testing:

1st rack travel in: 11.00 Speed rpm : 1290...1300 2nd rack travel in: 4.00 Speed rpm : 1395...1425 4th rack travel in: 1500 rpm : 0.30...1.40 Speed LOW IDLE 1 Control lever position degrees: 33...41 Setting point w/out bumper spring rpm : 400 Rack travel in mm: 5.3 Testing: Speed rpm : 100 Minimum rack trave: 19.00 rpm : 400 Rack travel in mm : 5.20...5.40 Rack travel in mm : 2.00 rpm : 510...570 Speed TORQUE CONTROL Torque control curve - 1st version rpm : 1250 1st speed Rack travel in m: 12.00...12.10 2nd speed rpm : 750 Rack travel in m: 12.40...12.60 FUEL DELIVERY CHARACTERISTICS 1st version rpm : 750 Speed Del.quantity cm3/: 122.0...126.0 1000 s: (120.0...128.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 11.00 : 1290...1300 Speed rpm INTERMEDIATE RATED SPEED Rack travel in mm: 4.00 STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/: 135.0...155.0 1000 s: (130.0...160.0) Rack travel in mm : 20.00...21.00

rom : 400

LOW IDLE

Speed

E04

Rack travel in mm : 5.70...5.90 Del.quantity cm3/ : 16.0...20.0 1000 s: (13.5...22.5) Spread cm3 : 3.50 1000 s: (5.50) Remarks: Adjust stop lever to 0.5...1.0 mm before stop. Start-of-delivery mark 11° cam angle after start of delivery cyl. 1

Note remarks

: CUM 8,3 L Test sheet : 20.12.88 Edition

Replaces Test oil : ISO-4113

Combination no. : 0 400 866 128

Injection pump

Pump designation : PES6A100D320/3RS2763

EP type number : 0 410 806 006

Governor

: RSV410...950A0C2190-Governor design.

26R

: 0 420 233 224 Governer no.

Customer-spec. information Customer : C.D.C.

: 6 CT Engine

: 138.0 1st version kW Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 017 assembly

Opening |

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

: 1 680 750 014 Test lines

Outside diameter x Wall thickness

x Length mm : 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ___

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

: 2.80...2.90 : (2.75...3.00) Prestroke mm

Rack travel in mm : 10.50

: 1-5-3-6-2-4 Firing order

Phasing : 0-60-120-180-240-300

Tolerance + - 0 : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 950

Rack travel in mm : 9.60...9.70

Del.quantity cm3/: 8.4...8.6

100 s: (8.2...8.8)

cm3 : 0.3Spread

100 s: (0.6)

rpm : 410.0 2nd speed Rack travel in mm: 5.0...5.2 Del.quantity cm3/: 1.6...2.0 100 s: (1.3...2.2)

cm3 : 0.3Spread 100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 950 Speed

: 84.5...86.5 Del.quantity 1000

: (82.5...88.5)

: 3.50 Spread cm3

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 40...48

Testing:

1st rack travel in: 8.60 Speed rpm : 1010...1020 2nd rack travel in: 4.00 rpm : 1050...1080 Speed

4th rack travel in: 1150 Speed rpm : 0.30...1.40

LOW IDLE 1 Control lever

position degrees: 24...32 Setting point w/out bumper spring

: 410 rpm Rack travel in mm: 4.6

Testing:

rpm : 100 Speed Minimum rack trave: 19.00 : 410 Speed rpm

Rack travel in mm : 5.00...5.20 Rack travel in mm : 2.00

rpm : 455...515

TORQUE CONTROL

Torque control curve - 1st version

rpm : 950 1st speed

Rack travel in m: 9.60...9.70

2nd speed rpm : 650

Rack travel in m: 10.70...10.90

FUEL DELIVERY CHARACTERISTICS

1st version

: 650 Speed rpm

Del.quantity cm3/: 99.0...103.0 1000 s: (97.0...105.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 8.60

rpm : 1010...1020 Speed

STARTING FUEL DELIVERY

LOW IDLE

rpm : 410 Speed

Rack travel in mm : 5.00...5.20 Del.quantity cm3/: 16.0...20.0 1000 s: (13.5...22.5)

cm3 : 3.50Spread

1000 s: (5.50)

Remarks:

Adjustment without torque-control spring retainer with 0,5 mm less control-rod travel. Increase in full-load delivery with torque-control spring retainer.

Adjust stop lever to 0.5...1.0 mm before stop.

Start-of-delivery mark at 10° cam rotation angle after start of delivery, cylinder 1

Note remarks

Test sheet : CUM 8,3 L 1 Edition

Replaces

Test oil : ISO-4113

Combination no. : 0 400 866 129

Injection pump

Pump designation : PES6A100D320/3RS2763

EP type number : 0 410 806 006

Governor design.

Customer-spec. information Customer : C.D.C.

: 6CT 8.3 Engine

1st version kW : 111.0 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil

Overflow valve

diameter mm : 0,6

x Wall thickness

: 6.00X2.00X600 x Length mm

Insp. values in parentheses Set equal delivery quant.

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

: 20.12.88

Governor

: RSV400...1050A0c2190

-27R

: 0 420 233 225 Governer no.

inlet temp. °C : 38...42

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 017 assembly

Openina

pressure, bar : 207...210

Orifice plate

: 1 680 750 014 Test lines

Outside diameter

(A) Injection pump setting values

per values _

E07

: 2.80...2.90 Prestroke mm : (2.75...2.95)

Rack travel in mm : 10.50

: 1-5-3-6-2-4 Firing order

Phasing : 0-60-120-180-240-300

Tolerance + - 0 : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1100

Rack travel in mm : 10.20...10.30

Del.quantity cm3/: 8.7...8.9

100 s: (8.5...9.1)

cm3 : 0.3Spread

100 s: (0.6)

rpm : 400.0 2nd speed Rack travel in mm : 5.3...5.5 Del.quantity cm3/ : 1.1...1.5

100 s: (0.9...1.8)

cm3 : 0.3Spread 100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3 rpm : 800

Speed Rack travel in mm: 0.30...0.70

Governor spring pre-tension Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1100 Speed

Del.quantity : 87.0...89.0 1000 : (85.0...91.0)

: 3.50 Spread cm3

1000 : (6.00)

RATED SPEED

1st version

Control Lever

position degrees: 46...54

Testing:

1st rack travel in: 9.20 Speed 2nd rack travel in: 4.00

rpm : 1145...1155

Speed rpm : 1205...1235

3rd rack travel in: 4.00 Speed rpm : 1210...1240 4th rack travel in: 1300

rpm : 0.30...1.40Speed

LOW IDLE 1 Control lever

position degrees: 25...33 Setting point w/out bumper spring

rpm : 400 Rack travel in mm: 4.9

Testing:

Speed rpm : 100 Minimum rack trave: 19.00 rpm : 400 Speed

Rack travel in mm : 5.30...5.50 Rack travel in mm : 2.00

: 470...530 Speed man

TORQUE CONTROL

Torque control curve - 1st version

rpm : 1100 1st speed

Rack travel in m: 10.20...10.30

2nd speed rpm : 750

Rack travel in m: 11.30...11.50

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 750

Del.quantity cm3/: 99.0...103.0 1000 s: (97.0...105.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 9.20

rpm : 1145...1155 Speed

STARTING FUEL DELIVERY

: 100 Speed rpm

Del.quantity cm3/: 150.0...170.0 1000 s: (145.0...175.0) Rack travel in mm: 19.00...21.00

LOW IDLE

: 400 Speed rpm

Rack travel in mm : 5.30...5.50

F08

Del.quantity cm3/: 11.5...15.5

1000 s: (9.0...18.0)

Spread cm3 : 3.501000 s: (5.50)

Remarks:

Adjustment without torque-control spring retainer with 0,5 mm less control-rod travel. Increase in full-load delivery with torque-control spring retainer.

Adjust stop lever to 0.5...1.0 mm before stop.

Start-of-delivery mark 11° cam angle after start of delivery cyl. 1

Note remarks

Test sheet : CUM 8,3 m : 20.12.88 Edition

Replaces

Test oil : ISO-4113

Combination no. : 0 400 866 131

Injection pump

Pump designation : PES6A100D320/3RS2691

: 9 410 230 025 EP type number

Governor

: RSV425...900A4C2213-Governor design.

2R

: 0 420 233 230 Governer no.

: 3914869 Cust. part no.

Customer-spec. information Customer : C.D.C.

: 6 CT 8.3 Engine

1st version kW : 154.0 : 1800 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 017 assembly

Opening

: 207...210 pressure, bar

Orifice plate

: 0,6 diameter mm

Test lines : 1 680 750 014

Outside diameter

x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm

: 2.80...2.90 : (2.75...2.95)

Rack travel in mm : 10.50

Firina order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - 0 : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 830

Rack travel in mm : 13.40...13.50

Del.quantity cm3/: 13.5...13.7

100 s: (13.3...13.9)

cm3 : 0.3Spread

100 s: (0.6)

rpm : 425.0 2nd speed Rack travel in mm : 5.5...5.7 Del.quantity cm3/ : 1.2...1.6

100 s: (0.9...1.8)

Spread cm3 : 0.3100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800 Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 830 Speed

: 135.0...137.0 Del.quantity

1000 : (133.0...139.0)

: 3.50 cm3 Spread

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 44...48

Testing: 1st rack travel in: 12.40 rpm : 925...935 Speed 2nd rack travel in: 4.00 rpm : 960...990 Speed 3rd rack travel in: 4.00 4th rack travel in: 1030 rpm : 0.30...1.40Speed LOW IDLE 1 Control Lever position degrees: 20...28 Setting point w/out bumper spring rpm : 425 Rack travel in mm : 5.0 Testing: : 100 Speed rpm Minimum rack trave: 19.00 : 425 rpm Rack travel in mm : 5.40...5.60 Rack travel in mm : 2.00 Speed : 435...495 rpm BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 12.40 rpm : 925...935 Speed STARTING FUEL DELIVERY : 100 Speed rpm Del.quantity cm3/: 135.0...155.0 1000 s: (130.0...160.0) Rack travel in mm: 19.00...21.00 LOW IDLE Speed rpm : 425 Rack travel in mm : 5.50...5.70 Del.quantity cm3/: 12.0...16.0 1000 s: (9.5...18.5) cm3 : 3.50 Spread 1000 s: (5.50) Remarks: Adjust stop lever to 0.5...1.0 mm before stop. Start-of-delivery mark at 10° cam rotation angle after start of delivery, cylinder 1

Note remarks

Test sheet : CUM 8,3 m 1 Edition : 20.12.88

Replaces

Test oil : ISO-4113

: 0 400 866 138 Combination no.

Injection pump

Pump designation : PES6A100D320/3RS2691

: 9 410 230 025 EP type number

Governor

: RSV425...750A4C2213-Governor design.

: 0 420 233 235 Governer no.

Customer—spec. information Customer : C.D.C.

: 6CT- 8.3 L Engine

: 135.0 1st version kW : 1500 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 017 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter

x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

: 2.80...2.90 : (2.75...2.95) Prestroke mm

Rack travel in mm : 10.50

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - 0 : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

rpm: 750 1st speed

Rack travel in mm : 14.00...14.10

Del.quantity cm3/: 14.2...14.4

100 s: (14.0...14.6)

cm3 : 0.3Spread

100 s: (0.6)

rpm : 425.0 2nd speed

Rack travel in mm: 6.0...6.2 Del.quantity cm3/: 1.8...2.2

100 s: (1.5...2.4)

cm3 : 0.3Spread

100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 750

: 142.5...144.5 : (140.5...146.5) Del.quantity

1000

: 3.50 Spread cm3

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 37...45

Testing:

1st rack travel in: 13.00 rpm : 795...805 Speed 2nd rack travel in: 4.00 rpm : 825...855 Speed 3rd rack travel in: 4.00 rpm : 830...860 Speed LOW IDLE 1 Control lever position degrees: 19...27 Setting point w/out bumper spring rpm : 425 Rack travel in mm: 5.6 Testina: Speed rpm : 100 Minimum rack trave: 19.00 : 425 rpm Speed Rack travel in mm : 6.00...6.20 Rack travel in mm : 2.00 : 440...500 Speed rpm BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 13.00 rpm : 795...805 Speed STARTING FUEL DELIVERY Speed : 100 rpm Del.quantity cm3/: 135.0...155.0 1000 s: (130.0...160.0) Rack travel in mm : 19.00...21.00 LOW IDLE rpm : 425 Speed Rack travel in mm : 6.00...6.20 Del.quantity cm3/: 18.0...22.0 1000 s: (15.5...24.5) cm3 : 3.50 Spread 1000 s: (5.50) Remarks: Start-of-delivery mark at 10° cam rotation angle after start of delivery, cylinder 1 Adjust stop lever to 0.5...1.0 mm before stop. **APPLICATION**

Generator

Note remarks

Test sheet : CUM 8,3 L 2 : 20.12.88 Edition

Replaces

Test oil : ISO-4113

Combination no. : 0 400 866 139

Injection pump

Pump designation : PES6A100D320/3RS2763

EP type number : 0 410 806 006

Governor

: RSV400...1250A0c2190 Governor design.

-32R

Governer no. : 0 420 233 236

Customer-spec. information Customer : CDC

: 6 CT 8.3 ltr Engine

1st version kW : 114.0 : 2500 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 457 413 047

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 017 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter

x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

: 2.80...2.90 Prestroke mm : (2.75...2.95)

Rack travel in mm : 10.50

: 1-5-3-6-2-4 Firing order

Phasing : 0-60-120-180-240-300

Tolerance + - 0 : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1250

Rack travel in mm : 9.20...9.30

Del.quantity cm3/: 8.4...8.6

100 s: (8.2...8.8)

Spread cm3 : 0.3

100 s: (0.6)

rpm : 400.02nd speed Rack travel in mm: 5.1...5.3

Del.quantity cm3/: 1.6...2.0 100 s: (1.3...2.2)

cm3 : 0.3Spread

100 s: (0.5)

GUIDE SLEEVE POSITION Control-Lever position

Degree: -3

rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1250Speed

: 84.0...86.0 Del.quantity

: (82.0...88.0) 1000

: 3.50 Spread cm3 1000

: (6.00)

RATED SPEED

1st version

Control Lever

position degrees: 53...61

Testing:

1st rack travel in: 8.20

rpm : 1310...1320 Speed

2nd rack travel in: 4.00

rpm : 1345...1375 Speed

3rd rack travel in: 4.00

Speed rpm : 1350...1380 4th rack travel in: 1450

rpm : 0.30...1.40Speed

LOW IDLE 1 Control Lever

position degrees: 28...36

Setting point w/out bumper spring

rpm : 400 Rack travel in mm: 4.7

Testing:

Speed rpm : 100

Minimum rack trave: 19.00

Speed rpm : 400
Rack travel in mm : 5.10...5.30
Rack travel in mm : 2.00

rpm : 480...540 Speed

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1250

Rack travel in m: 9.20...9.30

2nd speed rpm : 800

Rack travel in m: 9.60...9.80

FUEL DELIVERY CHARACTERISTICS

1st version

: 800 Speed rpm

Del.quantity cm3/: 80.5...84.5 1000 s: (78.5...86.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 8.20

: 1310...1320 Speed CDM

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 145.0...165.0 1000 s: (140.0...170.0) Rack travel in mm : 19.00...21.00

LOW IDLE

rpm : 400

Rack travel in mm : 5.10...5.30

E14

Del.quantity cm3/: 16.0...20.0 1000 s: (13.5...22.5) Spread cm3 : 3.50 1000 s: (5.50)

Remarks:

before stop.

Adjustment without torque-control spring retainer with 0,5 mm less control-rod travel. Increase in full-load delivery with torque-control spring retainer.

Adjust stop lever to 0.5...1.0 mm

Start-of-delivery mark 11° cam angle after start of delivery cyl. 1

Note remarks

Test sheet : CUM 5,9 V Edition : 10.02.89

Replaces

: ISO-4113 Test oil

: 0 400 866 143 Combination no.

Injection pump

Pump designation : PES6A95D12ORS2773 EP type number : 0 410 896 904

Governor

: RSV350...1250A2C2237 Governor design.

: 0 420 233 240 Governer no.

Customer-spec. information : CUMMINS Customer

Engine : 6BT

: 118.0 1st version kW : 2500 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 017 assembly

Opening |

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

: 1 680 750 008 Test lines

Outside diameter x Wall thickness

x Length mm : 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ___

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.10...2.20 : (2.05...2.25) Prestroke mm

Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4

: 0-60-120-180-240-300 Phasing

Tolerance + - 0 : 0.50 (0.75)

BASIC SETTING

1st speed rom: 1250

Rack travel in mm : 9.40...9.50

Del.quantity cm3/: 8.8...9.0

100 s: (8.6...9.3)

Spread cm3 : 0.3

100 s: (0.6)

rpm : 350.02nd speed Rack travel in mm : 5.4...5.6 Del.quantity cm3/: 1.6...2.2 100 s: (1.3...2.4)

cm3 : 0.3Spread

100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position Degree: -3

rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 3.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1250 Speed

: 88.5...90.5 Del.quantity 1000 : (86.0...93.0)

: 3.50 Spread cm3

1000 : (6.00)

RATED SPEED

1st version Control lever

position degrees: 39...47

Testina:

1st rack travel in: 8.40

rpm : 1290...1300 Speed

2nd rack travel in: 4.00 rpm : 1355...1385 Speed 3rd rack travel in: 4.00 Speed rpm : 1365...1395 4th rack travel in: 1530 rpm : 0.30...1.40Speed LOW IDLE 1 Control lever position degrees: 20...28 Setting point w/out bumper spring rpm Rack travel in mm : 5.0 Testing: Speed rpm : 100 Minimum rack trave: 19.50 Speed rpm : 350
Rack travel in mm : 5.40...5.60
Rack travel in mm : 2.00 rpm : 465...525 Speed TORQUE CONTROL Torque control curve - 1st version rpm : 1250 1st speed Rack travel in m: 9.40...9.50 2nd speed rpm : 500 Rack travel in m: 9.40...9.60 FUEL DELIVERY CHARACTERISTICS 1st version Speed rpm : 500 Del.quantity cm3/ : 77.0...80.0 1000 s: (75.0...82.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 8.40 rpm : 1290...1300 Speed STARTING FUEL DELIVERY : 100 Speed rpm Del.quantity cm3/: 110.0...120.0 1000 s: (107.0...123.0) Rack travel in mm: 14.10...14.50 LOW IDLE Speed rpm : 350
Rack travel in mm : 5.40...5.60
Del.quantity cm3/ : 16.0...22.0

1000 s: (13.5...24.5)

Spread cm3 : 3.50 1000 s: (5.50)

Remarks:

Start-of-delivery mark = 12,5° after start of delivery cyl. 1.

Note remarks

: LIE 5,6 a 1 : 07.02.89 Test sheet Edition

Replaces

Test oil : ISO-4113

Combination no. : 0 400 874 238A

Injection pump

Pump designation : PES4A95D41ORS2685

EP type number : 0 410 894 996

Governor

Governor design. : RSV400...1000A1c2187

: 0 420 232 387 Governer no.

Customer-spec. information Customer : LIEBHERR

: D904 NA Engine

: 60.0 1st version kW : 2000 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 40...45

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening |

: 172...175 pressure, bar

Test lines : 1 680 750 008

Outside diameter

x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.70...2.80

: (2.65...2.85)

Rack travel in mm : 9.00...12.00

: 1-3-4-2 Firing order

Phasina : 0-90-180-270

Tolerance + - 0 : 0.50 (0.75)

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 8.50...9.50 & maximum rack tra: 21.00

Difference ° CS : 4.00...5.00

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 9.00...9.10

Del.quantity cm3/: 7.5...7.7

100 s: (7.3...7.9)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 400.0

Rack travel in mm : 6.3...6.5 Del.quantity cm3/: 1.0...1.6

100 s: (0.7...1.8)

Spread cm3 : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800 Speed

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 2.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

: 75.0...77.0 Del.quantity 1000 : (73.0...79.0)

: 3.50 cm3

1000 : (6.00)

RATED SPEED

Spread

1st version Control lever

position degrees: 39...47

Testing: 1st rack travel in: 8.00 rpm : 1040...1050 Speed 2nd rack travel in: 4.00 Speed rpm: 1045...1075 3rd rack travel in: 4.00 Speed rpm: 1070...1100 4th rack travel in: 1240 rpm : 0.30...1.40 Speed LOW IDLE 1 Control Lever position degrees: 13...21 Setting point w/out bumper spring Speed rpm : 400 Rack travel in mm: 5.9 Testina: Speed rpm : 100 Minimum rack trave: 19.50 rpm : 400 Speed Rack travel in mm: 6.30...6.50 Rack travel in mm: 2.00 : 510...570 Speed rpm TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1000 Rack travel in m: 9.00...9.10 2nd speed rpm : 500 Rack travel in m: 9.00...9.20 FUEL DELIVERY CHARACTERISTICS 1st version rpm : 600 Speed Del.quantity cm3/: 62.5...65.5 1000 s: (60.0...68.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 8.00 Speed rpm : 1040...1050 INTERMEDIATE RATED SPEED Rack travel in mm: 4.00 STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 120.0...130.0

Rack travel in mm: 19.50...21.00

1000 s: (117.0...133.0)

LOW IDLE

Speed rpm : 400
Rack travel in mm : 6.30...6.50
Del.quantity cm3/ : 10.0...16.0
1000 s: (7.5...18.5)
Spread cm3 : 3.50

1000 s: (5.50)

Remarks:

Note remarks

Test sheet : LIE 5,6 a 2 : 07.02.89 Edition

Replaces

: ISO-4113 Test oil

: 0 400 874 238B Combination no.

Injection pump

Pump designation : PES4A95D410RS2685 : 0 410 894 996 EP type number

Governor

: RSV400...1000A1C2187 Governor design.

: 0 420 232 387 Governer no.

Customer-spec. information : LIEBHERR Customer

Engine : D904 NA

1st version kW : 70.0 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 40...45

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

: 172...175 pressure, bar

: 1 680 750 008 Test lines

Outside diameter x Wall thickness

x Length mm : 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.70...2.80 Prestroke mm

: (2.65...2.85)

Rack travel in mm : 9.00...12.00 Firing order : 1-3-4-2

Phasing : 0-90-180-270

Tolerance + - 0 : 0.50 (0.75)

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 8.50...9.50 & maximum rack tra: 21.00 Difference ° CS : 4.00...5.00

BASIC SETTING

1st speed rpm: 1000

Rack travel in mm : 10.20...10.30

Del.quantity cm3/: 8.6...8.8

100 s: (8.4...9.0)

Spread cm3 : 0.3

100 s: (0.6)

rpm : 400.0 2nd speed Rack travel in mm: 6.3...6.5 Del.quantity cm3/: 1.0...1.6

100 s: (0.7...1.8) cm3 : 0.3Spread

100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3 Speed

rpm : 800 Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 2.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

: 86.0...88.0 Del.quantity 1000 : (84.0...90.0)

: 3.50 Spread cm3

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 39...47

Testing: 1st rack travel in: 9.20 rpm : 1040...1050 Speed 2nd rack travel in: 4.00 rpm : 1045...1075 Speed 3rd rack travel in: 4.00 Speed rpm : 1075...1105 4th rack travel in: 1240 Speed rpm : 0.30...1.40 LOW IDLE 1 Control Lever position degrees: 13...21 Setting point w/out bumper spring rpm : 400 Rack travel in mm : 5.9 Testing: Speed rpm : 100 Minimum rack trave: 19.50 rpm : 400 Rack travel in mm : 6.30...6.50 Rack travel in mm : 2.00 Speed rpm : 510...570 TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1000 Rack travel in m: 10.20...10.30 2nd speed rpm : 500 Rack travel in m: 10.20...10.40 FUEL DELIVERY CHARACTERISTICS 1st version Speed rpm : 600 Del.quantity cm3/: 80.5...83.5 1000 s: (78.0...86.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 9.20 rpm : 1040...1050 Speed INTERMEDIATE RATED SPEED Rack travel in mm: 4.00 STARTING FUEL DELIVERY rpm : 100 Del.quantity cm3/: 120.0...130.0

1000 s: (117.0...133.0)

Rack travel in mm : 19.50...21.00

LOW IDLE

Speed rpm : 400 Rack travel in mm : 6.30...6.50 Del.quantity cm3/: 10.0...16.0 1000 s: (7.5...18.5) Spread cm3 : 3.50 1000 s: (5.50)

:

Remarks:

Note remarks

: LIE 5,6 a 3 : 07.02.89 Test sheet Edition

Replaces

Test oil : ISO-4113

Combination no. : 0 400 874 2380

Injection pump

Pump designation : PES4A95D410RS2685 EP type number : 0 410 894 996

Governor

: RSV400...1000A1c2187 Governor design.

: 0 420 232 387 Governer no.

Customer-spec. information Customer : LIEBHERR

: D904 NA Engine

: 62.0 1st version kW Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 40...45

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Openina

: 172...175 pressure, bar

Test lines : 1 680 750 008

Outside diameter x Wall thickness

x Length mm : 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.70...2.80

: (2.65...2,85)

Rack travel in mm : 9.00...12.00

: 1-3-4-2 Firing order

Phasing : 0-90-180-270

Tolerance + - 0 : 0.50 (0.75)

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 8.50...9.50

& maximum rack tra: 21.00

Difference ° CS : 4.00...5.00

BASIC SETTING

rpm : 10001st speed

Rack travel in mm : 9.90...10.00

Del.guantity cm3/: 7.7...7.9

100 s: (7.5...8.1)

cm3 : 0.3Spread

100 s: (0.6)

rpm : 400.02nd speed Rack travel in mm: 6.3...6.5 Del.quantity cm3/: 1.0...1.6 100 s: (0.7...1.8)

cm3 : 0.3Spread 100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800 Speed Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 3.25

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1000 Speed

Del.quantity : 77.0...79.0 1000 : (75.0...81.0)

: 3.50 Spread cm3

: (6.00) 1000

RATED SPEED

1st version Control lever

position degrees: 44...52

Testing: 1st rack travel in: 8.90 rpm : 1040...1050 Speed 2nd rack travel in: 4.00 rpm : 1055...1085 Speed 3rd rack travel in: 4.00 Speed rpm : 1075...1105 4th rack travel in: 1240 rpm : 0.30...1.40 Speed LOW IDLE 1 Control lever position degrees: 17...25 Setting point w/out bumper spring rpm : 400 Rack travel in mm: 5.9 Testing: rpm : 100 Speed Minimum rack trave: 19.50 rpm : 400 Speed Rack travel in mm : 6.30...6.50 Rack travel in mm : 2.00 Speed rpm : 520...580 TORQUE CONTROL Torque control curve - 1st version rpm : 1000 1st speed Rack travel in m: 9.90...10.00 2nd speed rpm : 500 Rack travel in m: 10.60...10.70 3rd speed rpm : 890 Rack travel in m: 10.30...10.50 FUEL DELIVERY CHARACTERISTICS 1st version rpm : 825 Speed Del.quantity cm3/: 82.5...85.5 1000 s: (80.0...88.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 8.90 rpm : 1040...1050 Speed INTERMEDIATE RATED SPEED Rack travel in mm: 4.00 STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/ : 120.0...130.0

1000 s: (117.0...133.0)

Rack travel in mm : 19.50...21.00

LOW IDLE

Speed rpm : 400 Rack travel in mm : 6.30...6.50

Del.quantity cm3/: 10.0...16.0 1000 s: (7.5...18.5) Spread cm3 : 3.50 1000 s: (5.50)

Remarks:

:

Note remarks

Test sheet : LIE 5,6 a 4 : 07.02.89 Edition

Replaces

Test oil : ISO-4113

Combination no. : 0 400 874 238E

Injection pump

Pump designation : PES4A95D41DRS2685 EP type number : 0 410 894 996

Governor

: RSV400...1000A1c2187 Governor design.

: 0 420 232 387 Governer no.

Customer-spec. information Customer : LIEBHERR

: D904 TB Engine

: 77.0 1st version kW : 2000 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 40...45

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.50

Test nozzle holder

: D 681 343 009 assembly

Opening

pressure, bar : 172...175

Test Lines : 1 680 750 008

Outside diameter x Wall thickness

: 6.00X2,00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ___

BEGINNING OF DELIVERY Test pressure, bar: 25...27

: 2.70...2.80 Prestroke mm

: (2.65...2.85)

Rack travel in mm : 9.00...12.00 Firing order : 1-3-4-2

Phasing : 0-90-180-270

Tolerance + - 0 : 0.50 (0.75)

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 8.50...9.50

& maximum rack tra: 21.00 Difference ° CS : 4.00...5.00

BASIC SETTING

1st speed rpm: 1000

Rack travel in mm : 11.20...11.30

Del.quantity cm3/: 9.9...10.1

100 s: (9.7...10.3)

Spread cm3 : 0.3

100 s: (0.6)

rpm : 400.02nd speed

Rack travel in mm: 6.3...6.5 Del.quantity cm3/: 1.0...1.6

100 s: (0.7...1.8)

cm3 : 0.3Spread

100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800 Speed Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 2.75

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1000 Speed

: 99.0...101.0 Del.quantity 1000

: (97.0...103.0)

: 3.50 Spread cm3

: (6.00) 1000

RATED SPEED

1st version

Control Lever

position degrees: 42...50

Testing:

1st rack travel in: 10.20

rpm : 1040...1050 Speed

2nd rack travel in: 4.00

rpm : 1050...1080 Speed

3rd rack travel in: 4.00

Speed rpm : 1070...1100 4th rack travel in: 1235

rpm : 0.30...1.40Speed

LOW IDLE 1 Control lever

position degrees: 15...23

Setting point w/out bumper spring

rpm : 400 Rack travel in mm: 5.9

Testing:

Speed : 100 LDW Minimum rack trave: 19.50

: 400 Speed rpm

Rack travel in mm: 6.30...6.50 Rack travel in mm: 2.00 Speed rpm: 515...575

TORQUE CONTROL

: 1.15 Dimension a mm

Torque control curve - 1st version 1st speed rpm : 1000

Rack travel in m: 11.20...10.30 and speed rpm : 500 Rack travel in m: 12.40...12.50

2nd speed

: 820 3rd speed rpm

Rack travel in m: 11.70...11.90

FUEL DELIVERY CHARACTERISTICS

1st version

: 750 Speed rpm

Del.quantity cm3/: 112.0...115.0 1000 s: (109.5...117.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.20

rpm : 1040...1050 Speed

INTERMEDIATE RATED SPEED

Rack travel in mm: 4.00

STARTING FUEL DELIVERY

: 100 Speed rpm

Del.quantity cm3/: 120.0...130.0

1000 s: (117.0...133.0)

Rack travel in mm : 19.50...21.00

LOW IDLE

Speed rpm : 400 Rack travel in mm : 6.30...6.50 Del.quantity cm3/: 10.0...16.0 1000 s: (7.5...18.5)

cm3 : 3.50 1000 s: (5.50) Spread

Remarks:

F24

Note remarks

Test sheet : LIE 5,6 a 5 Edition : 07.02.89

Replaces

: ISO-4113 Test oil

Combination no. : 0 400 874 238F

Injection pump

Pump designation : PES4A95D41ORS2685 : 0 410 894 996 EP type number

Governor

Governor design. : RSV400...1000A1c2187

: 0 420 232 387 Governer no.

Customer-spec. information Customer : LIEBHERR

: D904 T Engine

: 81.0 1st version kW : 2000 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 40...45

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

Test lines : 1 680 750 008

Outside diameter x Wall thickness

x Length mm : 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY Test pressure, bar: 25...27

: 2.70...2.80 Prestroke mm

: (2.65...2.85)

Rack travel in mm : 9.00...12.00 Firing order : 1-3-4-2

Phasina : 0-90-180-270

: 0.50 (0.75) Tolerance + - 0

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 8.50...9.50 & maximum rack tra: 21.00 Difference ° CS : 4.00...5.00

BASIC SETTING

1st speed rpm: 1000

Rack travel in mm : 12.10...12.20

Del.quantity cm3/: 11.3...11.5

100 s: (11.1...11.7)

Spread cm3 : 0.3

100 s: (0.6)

rpm : 400.0 2nd speed Rack travel in mm: 6.3...6.5 Del.quantity cm3/: 1.0...1.6 100 s: (0.7...1.8)

cm3 : 0.3Spread

100 s: (0.5)

GUIDE SLEEVE POSITION Control-Lever position

Degree: -3 rpm : 800 Speed

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 2.75

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1000 Speed

Speed Del.quantity 1000 : 113.0...115.0 : (111.0...117.0)

: 3.50 cm3 Spread

: (6.00) 1000

RATED SPEED

1st version Control Lever

position degrees: 42...50

Testing: 1st rack travel in: 11.10 Speed rpm : 1040...1050 2nd rack travel in: 4.00 Speed rpm : 1050...1080 3rd rack travel in: 4.00 rpm : 1080...1110 Speed 4th rack travel in: 1245 rpm : 0.30...1.40Speed LOW IDLE 1 Control Lever position degrees: 15...23 Setting point w/out bumper spring rpm : 400 Rack travel in mm : 5.9 Testina: Speed rpm : 100 Minimum rack trave: 19.50 rpm : 400 Speed Rack travel in mm: 6.30...6.50 Rack travel in mm: 2.00 : 515...575 Speed rpm TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1000 Rack travel in m: 12.10...12.20 2nd speed rpm : 500
Rack travel in m: 12.60...12.60
3rd speed rpm : 880 Rack travel in m: 12.30...12.50 FUEL DELIVERY CHARACTERISTICS 1st version : 900 Speed rpm Del.quantity cm3/: 121.0...124.0 1000 s: (118.5...126.5) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 11.10 rpm : 1040...1050 Speed INTERMEDIATE RATED SPEED Rack travel in mm: 4.00 STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 120.0...130.0 1000 s: (117.0...133.0)

Note remarks

: LIE 5,6 a 6 : 07.02.89 Test sheet Edition

Replaces

Test oil : ISO-4113

Combination no. : 0 400 874 238G

Injection pump

Pump designation : PES4A95D410RS2685

EP type number : 0 410 894 996

Governor

: RSV400...1000A1c2187 Governor design.

: 0 420 232 387 Governer no.

Customer-spec. information

Customer : LIEBHERR

: D904 T Engine

: 88.0 1st version kW : 2000 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 40...45

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening.

pressure, bar : 172...175

Test Lines : 1 680 750 008

Outside diameter

x Wall thickness

x Length mm : 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.70...2.80

: (2.65...2.85)

Rack travel in mm : 9.00...12.00

: 1-3-4-2 Firing order

: 0-90-180-270 Phasing

Tolerance + - 0 : 0.50 (0.75)

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 8.50...9.50 & maximum rack tra: 21.00

Difference ° CS : 4.00...5.00

BASIC SETTING

1st speed rpm: 1000

Rack travel in mm : 13.00...13.10

Del.quantity cm3/: 12.5...12.7

100 s: (12.3...12.9)

Spread cm3 : 0.3

100 s: (0.6)

rpm : 400.0 2nd speed Rack travel in mm: 6.3...6.5

Del.quantity cm3/: 1.0...1.6

100 s: (0.7...1.8) cm3 : 0.3Spread

100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

Speed rpm : 800 Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 2.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed : 1000 rpm

Del.quantity 125.0...127.0 : (123.0...129.0) : 3.50 1000

Spread cm3

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 40...48

Testing: 1st rack travel in: 12.00 Speed rpm : 1040...1050 2nd rack travel in: 4.00 rpm : 1045...1075 Speed 3rd rack travel in: 4.00 Speed rpm : 1080...1110 4th rack travel in: 1245 rpm : 0.30...1.40 Speed

LOW IDLE 1 Control lever position degrees: 13...21 Setting point w/out bumper spring rpm : 400 Rack travel in mm : 5.9

Testing: rpm : 100 Speed Minimum rack trave: 19.50 rpm : 400 Speed Rack travel in mm : 6.30...6.50 Rack travel in mm : 2.00 rpm : 510...570 Speed

TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1000 Rack travel in m: 13.00...13.10 2nd speed rpm : 500 Rack travel in m: 13.00...13.20

FUEL DELIVERY CHARACTERISTICS

1st version Speed : 500 rpm Del.quantity cm3/: 113.5...116.5 1000 s: (111.0...119.0) rpm : 700 Speed

Del.quantity cm3/: 119.0...122.0 1000 s: (116.5...124.5)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 12.00 Speed rpm : 1040...1050

INTERMEDIATE RATED SPEED Rack travel in mm: 4.00

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 120.0...130.0 1000 s: (117.0...133.0)

Rack travel in mm : 19.50...21.00

LOW IDLE

Remarks:

F28

Note remarks

: LIE 5,6 a 7 : 07.02.89 Test sheet Edition

Replaces

Test oil : ISO-4113

: 0 400 874 238H Combination no.

Injection pump

: PES4A95D41ORS2685 Pump designation

EP type number : 0 410 894 996

Governor

Governor design. : RSV400...1000A1C2187

: 0 420 232 387 Governer no.

Customer-spec. information Customer : LIEBHERR

: D904 TB Engine

1st version kW : 67.0 : 2000 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 40...45

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Openina

pressure, bar : 172...175

Test lines : 1 680 750 008

Outside diameter x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.70...2.80 Prestroke mm

: (2.65...2.85)

Rack travel in mm : 9.00...12.00

Firing order : 1-3-4-2

: 0-90-180-270 Phasing

Tolerance + - 0 : 0.50 (0.75)

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 8.50...9.50

& maximum rack tra: 21.00 Difference ° CS : 4.00...5.00

BASIC SETTING

rpm: 1000 1st speed

Rack travel in mm : 10.50...10.60

Del.quantity cm3/: 9.2...9.4

100 s: (9.0...9.6)

Spread cm3 : 0.3

100 s: (0.6)

rpm : 400.02nd speed

Rack travel in mm : 6.3...6.5 Del.quantity cm3/: 1.0...1.6

100 s: (0.7...1.8)

cm3 : 0.3Spread

100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

Speed rpm : 800 Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 2.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

: 1000 Speed rpm

: 92.0...94.0 Del.quantity 1000 : (90.0...96.0)

: 3.50 Spread cm3

: (6.00) 1000

RATED SPEED

1st version

Control lever

position degrees: 41...49

Testina: 1st rack travel in: 9.50 Speed rpm : 1040...1050 2nd rack travel in: 4.00 Speed rpm : 1045...1075 3rd rack travel in: 4.00 Speed rpm : 1075...1105 4th rack travel in: 1240 rpm : 0.30...1.40Speed LOW IDLE 1 Control lever position degrees: 14...22 Setting point w/out bumper spring rpm : 400 Speed Rack travel in mm: 5.9 Testina: Speed rpm : 100 Minimum rack trave: 19.50 rpm : 400 Speed Rack travel in mm : 6.30...6.50 Rack travel in mm : 2.00 Speed : 515...575 rom TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1000 Rack travel in m: 10.50...10.60 2nd speed rpm : 500
Rack travel in m: 10.90...11.00
3rd speed rpm : 900 Rack travel in m: 10.70...10.90 FUEL DELIVERY CHARACTERISTICS 1st version : 800 Speed rom Del.quantity cm3/: 98.0...101.0 1000 s: (95.5...103.5) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 9.50 rpm : 1040...1050 Speed INTERMEDIATE RATED SPEED Rack travel in mm : 4.00 STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/ : 120.0...130.0 1000 s: (117.0...133.0)

Rack travel in mm : 19.50...21.00

LOW IDLE

Speed rpm : 400
Rack travel in mm : 6.30...6.50
Del.quantity cm3/ : 10.0...16.0
1000 s: (7.5...18.5)
Spread cm3 : 3.50
1000 s: (5.50)

:

Remarks:

F02

Note remarks

Test sheet : LIE 5,6 a 8 Edition : 07.02.89

Replaces Test oil

: ISO-4113

Combination no. : 0 400 874 238J

Injection pump

Pump designation : PES4A950410RS2685 EP type number : 0 410 894 996

Governor

Governor design. : RSV400...1000A1C2187

: 0 420 232 387

Governer no.

Customer—spec. information Customer : LIEBHERR

: D904 T Engine

: 90.0 1st version kW : 2000 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 40...45

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Openina

pressure, bar : 172...175

Test lines : 1 680 750 008

Outside diameter

x Wall thickness

x Length mm : 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.70...2.80 Prestroke mm

: (2.65...2.85)

Rack travel in mm : 9.00...12.00 Firing order : 1-3-4-2

Phasing : 0-90-180-270

Tolerance + - 0 : 0.50 (0.75)

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 8.50...9.50 & maximum rack tra: 21.00 Difference ° CS : 4.00...5.00

BASIC SETTING

rpm: 1000 1st speed

Rack travel in mm : 12.50...12.60

Del.quantity cm3/: 12.1...12.3

100 s: (11.9...12.5)

cm3 : 0.3Spread

100 s: (0.6)

rpm : 400.0 2nd speed

Rack travel in mm : 6.3...6.5 Del.quantity cm3/ : 1.0...1.6

100 s: (0.7...1.8)

cm3 : 0.3Spread

100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

Speed rpm: 800 Rack travel in mm: 0.30...0.70

Governor spring pre-tension Click setting x : 2.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

: 1000 Speed rpm

: 121.5...123.5 : (119.5...125.5) Del.quantity

1000

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 40...48

Testing: 1st rack travel in: 11.50 Speed rpm : 1040...1050 2nd rack travel in: 4.00 Speed rpm : 1050...1080 3rd rack travel in: 4.00 rpm : 1080...1110 Speed 4th rack travel in: 1245 rpm : 0.30...1.40Speed LOW IDLE 1 Control lever position degrees: 13...21 Setting point w/out bumper spring Speed rpm : 400 Rack travel in mm : 5.9 Testing: Speed rpm : 100 Minimum rack trave: 19.50 rpm : 400 Rack travel in mm: 6.30...6.5 Rack travel in mm : 2.00 rpm : 510...570 Speed TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1000 Rack travel in m: 12.50...12.60 rpm : 500 2nd speed Rack travel in m: 12.50...12.70 **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 11.50 rpm : 1040...1050 Speed INTERMEDIATE RATED SPEED Rack travel in mm : 4.00 STARTING FUEL DELIVERY LOW IDLE Speed rpm : 400 Rack travel in mm : 6.30...6.50 Del.quantity cm3/: 10.0...16.0 1000 s: (7.5...18.5) Spread cm3 : 3.50 1000 s: (5.50)

Remarks:

F04

Note remarks

: LIE 8,4 a 1 Test sheet Edition : 07.02.89

Replaces

: ISO-4113 Test oil

Combination no. : 0 400 876 322A

Injection pump

Pump designation : PES6A95D41DRS2689

EP type number : 0 410 896 916

Governor

Governor design. : RSV400...1000A1c2187

: 0 420 232 387 Governer no.

Customer-spec. information Customer : LIEBHERR

: D906 NA Engine

1st version kW : 112.0 : 2000 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 40...45

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

: 1 680 750 008 Test Lines

Outside diameter x Wall thickness

x Length mm : 6.00X2.00X600

(A) Injection pump setting values Insp. vetues in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.70...2.80 Prestroke mm

: (2.65...2.85)

Rack travel in mm : 9.00...12.00 : 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - 0 : 0.50 (0.75)

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 8.50...9.50

& maximum rack tra: 21.00 Difference CS: 4.00...5.00

BASIC SETTING

rpm: 1000 1st speed

Rack travel in mm : 10.40...10.50

Del.quantity cm3/: 8.7...8.9

100 s: (8.5...9.1)

cm3 : 0.3Spread

100 s: (0.6)

rpm : 400.0 2nd speed Rack travel in mm : 6.3...6.5 Del.quantity cm3/ : 1.0...1.6

100 s: (0.7...1.8)

cm3 : 0.3Spread 100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3 rpm : 800 Speed

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1000 Speed

Del.quantity : 87.0...89.0 1000 : (85.0...91.0)

: 3.50 Spread cm3

: (6.00) 1000

RATED SPEED

1st version

Control lever

position degrees: 39...47

Testina:

1st rack travel in: 9.40

rpm : 1040...1050 Speed

2nd rack travel in: 4.00

Speed rpm : 1045...1075

3rd rack travel in: 4.00

Speed rpm : 1075...1105 4th rack travel in: 1240

rpm : 0.30...1.40 Speed

LOW IDLE 1

Control Lever

position degrees: 13...21

Setting point w/out bumper spring

rpm : 400 Rack travel in mm : 5.9

Testing:

Speed rpm : 100 Minimum rack trave: 19.50

rpm : 400

Rack travel in mm: 6.30...6.50 Rack travel in mm: 2.00 Speed rpm: 515...575

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1000

Rack travel in m: 10.40...10.50

2nd speed rpm : 500 Rack travel in m: 10.40...10.60

FUEL DELIVERY CHARACTERISTICS

1st version

rom : 600 Speed

Del.quantity cm3/: 77.5...80.5 1000 s: (75.0...83.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.40

rpm : 1040...1050 Speed

INTERMEDIATE RATED SPEED

Rack travel in mm : 4.00

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 120.0...130.0 1000 s: (117.0...133.0)

Rack travel in mm : 19.50...21.00

LOW IDLE

rpm : 400 Speed

Rack travel in mm : 6.30...6.50

Del.quantity cm3/: 10.0...16.0 1000 s: (7.5...18.5) Spread cm3 : 3.50 1000 s: (5.50)

Remarks:

Note remarks

Test sheet : LIE 8,4 a 2 Edition : 07.02.89

Replaces

Test oil : ISO-4113

Combination no. : 0 400 876 322B

Injection pump

Pump designation : PES6A95D41DRS2689

EP type number

: 0 410 896 916

Governor

Governor design. : RSV400...1000A1c2187

: 0 420 232 387 Governer no.

Customer-spec, information Customer : LIEBHERR

Engine : D906 TB

: 118.0 1st version kW : 2000 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 40...45

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

: 172...175 pressure, bar

Test Lines : 1 680 750 008

Outside diameter x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.70...2.80 Prestroke mm

: (2.65...2.85)

Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4

Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - 0 : 0.50 (0.75)

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 8.50...9.50

& maximum rack tra: 21.00

Difference * CS : 4.00...5.00

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 11.20...11.30

Del.quantity cm3/: 9.9...10.1

100 s: (9.7...10.3)

cm3 : 0.3Spread

100 s: (0.6)

rpm : 400.0 2nd speed Rack travel in mm : 6.3...6.5 Del.quantity cm3/: 1.0...1.6 100 s: (0.7...1.8)

Spread cm3 : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3 rpm : 800 Speed

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 2.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

99.0...101.0 1000 : (97.0...103.0) cm3 : 3.50 Del.quantity

Spread

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 39...47

Testing: 1st rack travel in: 10.20 rpm : 1040...1050 Speed 2nd rack travel in: 4.00 rpm : 1045...1075 Speed 3rd rack travel in: 4.00 Speed rpm : 1060...1090 4th rack travel in: 1225 rpm : 0.30...1.40 Speed LOW IDLE 1 Control Lever position degrees: 13...21 Setting point w/out bumper spring rpm : 400 Rack travel in mm : 5.9 Testing: rpm : 100 Speed Minimum rack trave: 19.50 rpm : 400 Rack travel in mm : 6.30...6.50 Rack travel in mm : 2.00 : 510...570 Speed rom TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1000 Rack travel in m: 11.20...11.30 rpm : 500 2nd speed Rack travel in m: 12.40...12.50 3rd speed rpm : 870 Rack travel in m: 11.80...12.00 FUEL DELIVERY CHARACTERISTICS 1st version Speed rpm : 750 Del.quantity cm3/ : 113.0...116.0 1000 s: (110.5...118.5) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 10.20 rpm : 1040...1050 Speed INTERMEDIATE RATED SPEED Rack travel in mm: 4.00 STARTING FUEL DELIVERY

rpm : 100 Del.quantity cm3/: 120.0...130.0 1000 s: (117.0...133.0) Rack travel in mm : 19.50...21.00

LOW IDLE

Speed rpm : 400 Rack travel in mm : 6.30...6.50

Del.quantity cm3/: 10.0...16.0 1000 s: (7.5...18.5) Spread cm3 : 3.50 1000 s: (5.50)

Remarks:

F08

Speed

Note remarks

: LIE 8,4 a 3 Test sheet : 07.02.89 Edition

Replaces

Test oil : ISO-4113

Combination no. : 0 400 876 322c

Injection pump

Pump designation : PES6A95D41ORS2689

EP type number

: 0 410 896 916

Governor

: RSV400...1000A1c2187 Governor design.

: 0 420 232 387 Governer no.

Customer-spec. information Customer : LIEBHERR

Engine : D906 T

: 132.0 1st version kW Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 40...45

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

: 172...175 pressure, bar

Test Lines : 1 680 750 008

Outside diameter x Wall thickness

x Length mm : 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.70...2.80 Prestroke mm

: (2.65...2.85)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasina : 0-60-120-180-240-300

Tolerance + - 0 : 0.50 (0.75)

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 8.50...9.50 & maximum rack tra: 21.00 Difference ° CS : 4.00...5.00

BASIC SETTING

rpm: 1000 1st speed

Rack travel in mm : 12.10...12.20

Del.quantity cm3/: 11.5...11.7

100 s: (11.3...11.9)

cm3 : 0.3Spread

100 s: (0.6)

rpm : 400.0 2nd speed Rack travel in mm : 6.3...6.5 Del.quantity cm3/: 1.0...1.6

100 s: (0.7...1.8) Spread

cm3 : 0.3100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3
Speed rpm: 800
Rack travel in mm: 0.30...0.70

Governor spring pre-tension Click setting x : 2.25

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Del.quantity : 115.0...117.0 : (113.0...119.0) : 3.50 1000

Spread cm3

: (6.00) 1000

RATED SPEED

1st version Control lever

position degrees: 40...48

Testing: 1st rack travel in: 11.10 Speed rpm : 1040...1050 2nd rack travel in: 4.00 rpm : 1045...1075 Speed 3rd rack travel in: 4.00 Speed rpm : 1075...1105 4th rack travel in: 1240 Speed rpm : 0.30...1.40 LOW IDLE 1 Control Lever position degrees: 14...22 Setting point w/out bumper spring rpm : 400 Rack travel in mm: 5.9 Testina: Speed rpm : 100 Minimum rack trave: 19.50 Speed rpm: 400
Rack travel in mm: 6.30...6.50
Rack travel in mm: 2.00
Speed rpm: 530...590 TORQUE CONTROL Torque control curve - 1st version rpm : 1000 1st speed Rack travel in m: 12.10...12.20 2nd speed rpm : 500 Rack travel in m: 12.40...12.50
3rd speed rpm : 910
Rack travel in m: 12.20...12.40 FUEL DELIVERY CHARACTERISTICS 1st version : 800 Speed rpm Del.quantity cm3/: 118.0...121.0 1000 s: (115.5...123.5) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 11.10 rpm : 1040...1050 Speed INTERMEDIATE RATED SPEED Rack travel in mm: 4.00

Rack travel in mm : 19.50...21.00 LOW IDLE Speed rpm : 400 Rack travel in mm : 6.30...6.50 Del.quantity cm3/: 10.0...16.0 1000 s: (7.5...18.5) Spread cm3 : 3.50 1000 s: (5.50) Remarks:

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity_cm3/ : 120.0...130.0

1000 s: (117.0...133.0)

Note remarks

Test sheet : MB 6,0 c 2 Edition : 03.03.89 Replaces : 24.6.88 Test oil : ISO-4113

: 0 400 876 335 Combination no.

Injection pump

Pump designation : PES6A90D410RS2710 EP type number : 0 410 896 082

Governor

: RSV350...1200A1c1154 Governor design.

: 0 420 232 468 Governer no.

Customer-spec. information

Customer : DAIMLER-BENZ

: OM 366 Engine

1st version kW : 74.0 : 2400 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

: 172...175 pressure, bar

Test lines : 1 680 750 015

Outside diameter x Wall thickness

: 6.00x1.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.25...2.35 : (2.20...2.40) Prestroke mm

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

: 0-60-120-180-240-300 Phasing

Tolerance + - 0 : 0.50 (0.75)

BASIC SETTING

1st speed rpm: 1200

Rack travel in mm : 9.30...9.40

Del.quantity cm3/ : 5.1...5.2

100 s: (4.9...5.4)

cm3 : 0.3Spread

100 s: (0.4)

rpm : 370.0 2nd speed Rack travel in mm : 7.9...8.5

Del.quantity cm3/: 1.0...1.2

100 s: (0.8...1.4) cm3 : 0.2 Spread

100 s: (0.4)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800 Speed

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 5.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1200 Speed

: 51.0...52.0 Del.quantity

: (49.0...54.0) 1000 : 3.00 Spread cm3

: (4.50) 1000

RATED SPEED

1st version

Control lever

position degrees: 59...67 2nd rack travel in: 8.30 Speed rpm : 1250...1245

3rd rack travel in: 4.00

rpm : 1267...1280 Speed

4th rack travel in: 1400

rom : 0.30...1.40 Speed

LOW IDLE 1 Control lever position degrees: -3 Setting point w/out bumper spring : 370 rpm Rack travel in mm: 8.2 Testing: : 100 Speed rpm Minimum rack trave: 19.50 : 370 Speed rpm Rack travel in mm : 8.10...8.30 Rack travel in mm : 2.00 : 460...520 Speed rpm TORQUE CONTROL Torque control curve - 1st version rpm : 1200 1st speed Rack travel in m: 9.30...9.40 : 600 2nd speed rpm Rack travel in m: 10.00...10.20 rpm : 900 3rd speed Rack travel in m: 9.80...10.10 FUEL DELIVERY CHARACTERISTICS 1st version : 600 Speed rpm Del.quantity cm3/: 41.0...43.0 1000 s: (38.5...45.5) Speed : 900 rpm Del.quantity cm3/: 46.0...49.0 1000 s: (43.5...51.5) STARTING FUEL DELIVERY : 100 Speed rpm Del.quantity cm3/: 85.0...95.0 1000 s: (82.0...98.0) Rack travel in mm: 16.80...17.20 LOW IDLE Speed rpm Rack travel in mm : 7.90...8.50 Del.quantity cm3/: 10.0...12.0 1000 s: (8.0...14.0) cm3 : 2.50 Spread 1000 s: (4.50) Remarks: **APPLICATION** Unimog

F12

Note remarks

: MB 6.0 c 3 : 03.03.89 Test sheet Edition : 2.9.88 Replaces Test oil : ISO-4113

Combination no. : 0 400 876 336

Injection pump

Pump designation : PES6A90D410RS2710 EP type number : 0 410 896 082

Governor

Governor design. : RSV350...1200A1C1154

-1L

: 0 420 232 470 Governer no.

Customer-spec. information

Customer : DAIMLER-BENZ

Engine : OM 366

1st version kW : 81.0 : 2400 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

: 172...175 pressure, bar

Test lines : 1 680 750 015

Outside diameter x Wall thickness

x Length mm : 6.00x1.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.25...2.35 Prestroke mm

: (2.20...2.40)

Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - 0 : 0.50 (0.75)

BASIC SETTING

rpm : 1200 1st speed

Rack travel in mm : 9.80...9.90

Del.quantity cm3/: 5.3...5.4

100 s: (5.1...5.6)

Spread cm3 : 0.3

100 s: (0.4)

rpm : 370.0 2nd speed Rack travel in mm : 7.8...8.4 Del.quantity cm3/: 1.0...1.2

100 s: (0.8...1.4)

cm3 : 0.2 Spread 100 s: (8.4)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800 Speed

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 5.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

rpm : 1200 : 53.0...54.0 Del.quantity 1000 : (51.0...56.0)

: 3.00 Spread cm3

1000 : (4.50)

RATED SPEED

1st version

Control lever

position degrees: 59...67

Testing:

1st rack travel in: 8.80

rpm : 1240...1245 Speed

3rd rack travel in: 4.00

rpm : 1295...1325 Speed

4th rack travel in: 1400

Speed rpm : 0.30...1.40LOW IDLE 1 Control lever position degrees: -3 Setting point w/out bumper spring Speed : 370 rom Rack travel in mm: 8.1 Testing: Speed rpm : 100 Minimum rack trave: 19.50 Speed rpm : 370
Rack travel in mm : 8.00...8.20
Rack travel in mm : 2.00 Speed rpm : 470...530 TORQUE CONTROL Torque control curve - 1st version rpm : 1200 1st speed Rack travel in m: 9.80...9.90 2nd speed rpm : 600 Rack travel in m: 11.30...11.40 3rd speed rpm : 850 Rack travel in m: 11.10...11.30 h speed rpm : 950 4th speed Rack travel in m: 10.30...10.60 FUEL DELIVERY CHARACTERISTICS 1st version : 600 Speed rpm Del.quantity cm3/: 50.0...52.0 1000 s: (47.5...54.5) : 850 Speed rpm Del.quantity cm3/: 51.0...54.0 1000 s: (48.5...56.5) STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/: 85.0...95.0 1000 s: (82.0...98.0) Rack travel in mm: 17.10...17.50 LOW IDLE Speed rpm : 370 Rack travel in mm : 7.80...8.40 Del.quantity cm3/: 10.0...12.0 1000 s: (8.0...14.0) cm3 : 2.50 Spread 1000 s: (84.50) Remarks: :

APPLICATION

Unimog

F14

Note remarks

: RAB 9,7 d 1 : 13.05.87 Test sheet Edition

Replaces

: ISO-4113 Test oil

Combination no. : 0 400 876 340

Injection pump

Pump designation : PES6A95D410RS2108R

EP type number : 0 410 896 927

Governor

: RSV550...1100A1C607-Governor design.

: 0 420 232 486 Governer no.

Customer-spec. information Customer : RABA

: D2356 HM6 Engine

: 150.0 1st version kW : 2200 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.00

Test nozzle holder

assembly : 0 681 343 009

Opening

pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter

x Wall thickness

x Length mm : 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 1.70...1.80 Prestroke mm

: (1.65...1.85)

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

Phasing : 0-60-120-180-240-300

Tolerance + - 0 : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1080

Rack travel in mm : 13.40...13.50

Del.guantity cm3/: 12.2...12.4

100 s: (12.0...12.6)

cm3 : 0.3Spread

100 s: (0.6)

rpm : 550.02nd speed Rack travel in mm : 6.9...7.1 Del.quantity cm3/: 1.3...1.9 100 s: (1.0...2.1)

cm3 : 0.3 Spread 100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3 rpm : 800 Speed

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 3.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1080

: 122.0...124.0 Del.quantity 1000 : (120.0...126.0)

: 3.50 Spread cm3 1000 : (6,00)

RATED SPEED

1st version

Control Lever

position degrees: 48...56

Testing:

1st rack travel in: 12.40

rpm : 1120...1130 Speed

2nd rack travel in: 4.00

rpm : 1145...1175 Speed 3rd rack travel in: 4.00 Speed rpm : 1175...1205 4th rack travel in: 1340 rpm : 0.30...1.40 Speed LOW IDLE 1 Control lever position degrees: 24...32 Setting point w/out bumper spring rpm : 550 Rack travel in mm: 6.0 Testing: Speed rpm : 100 Minimum rack trave: 19.50 rpm : 550 Rack travel in mm : 6.40...6.60 Rack travel in mm : 2.00 rpm : 635...695 Speed TORQUE CONTROL Torque control curve - 1st version rpm : 1080 1st speed Rack travel in m: 13.40...13.50 rpm : 400 2nd speed Rack travel in m: 13.40...13.60 3rd speed rpm : 250 Rack travel in m: 14.60...15.20 FUEL DELIVERY CHARACTERISTICS 1st version rpm : 500 Speed Del.quantity cm3/: 0.0...124.5 1000 s: (0.0...127.0) Speed rpm : 700 Del.quantity cm3/: 120.0...123.0 1000 s: (117.5...125.5) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 12.40 : 1120...1130 Speed rpm Remarks:

Note remarks

Test sheet : RAB 10,8 b : 10.02.89 Edition : 12.9.86 Replaces Test oil : ISO-4113

: 0 401 246 013 Combination no.

Injection pump

Pump designation : PES6A100D410RS3039

EP type number : 0 411 206 018

Governor

Governor design. : RQ200/1100AB1215L

: 0 420 200 102 Governer no.

Customer-spec. information : RABA Customer

: D2156 MTKLL 6 Engine

1st version kW : 206.0 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Openina

: 172...175 pressure, bar

Test Lines : 1 680 750 014

Outside diameter x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY Test pressure, bar: 25...27

: 1.60...1.70 Prestroke mm : (1.55...1.75) Rack travel in mm : 9.00...12.00

F17

: 1-5-3-6-2-4 Firing order

Phasing : 0-60-120-180-240-300

Tolerance + - 0 : 0.50 (0.75)

Time to cyl. no.

BASIC SETTING

1st speed rpm: 1100

Rack travel in mm : 13.40...13.50

Del.quantity cm3/: 15.0...15.2

100 s: (14.8...15.4)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 200.0

Rack travel in mm: 6.7...6.9 Del.quantity cm3/: 1.0...1.6 100 s: (0.7...1.8) Spread cm3: 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -2

rpm : 600 Speed Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100 Aneroid pressure h: 700

: 150.0...152.0 Del.quantity 1000 : (148.0...154.0) : 3.00

cm3 Spread

1000 : (6.00)

RATED SPEED

1st version

Setting point:

Speed : 600 man Rack travel in mm : 20.0

Testing:

1st rack travel in: 12.50

rpm : 1145...1160 Speed

2nd rack travel in: 4.00

: 1205...1235 Speed rom

LOW IDLE 1

Setting point w/out bumper spring

rpm : 200 Rack travel in mm: 6.8

Testing:

Speed rpm : 100 Minimum rack trave: 8.20

Speed rpm: 200
Rack travel in mm: 6.70...6.90
Rack travel in mm: 2.00
Speed rpm: 325...365

TORQUE CONTROL

Dimension a mm : 0.55

Torque control curve - 1st version

1st speed rpm : 1100

Rack travel in m: 13.40...13.50

rpm : 600 2nd speed

Rack travel in m: 14.70...14.80

rpm : 880 3rd speed

Rack travel in m: 14.00...14.20

rpm : 945 4th speed

Rack travel in m: 13.50...13.80

Aneroid/Altitude Compensator Test

1st version

Setting

pm : 500 hPa : 700 Speed rpm Pressure

Rack travel mm : 14.60...14.80

Measurement

 $1/\min : 500$ Speed

1st pressure hPa : -

Rack travel in m: 10.70...10.80

2nd pressure hPa : 450

Rack travel in m: 13.70...13.80
3rd pressure hPa : 325
Rack travel in m: 12.10...12.30

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700 Speed rpm : 750 Del.quantity cm3/ : 163.0...166.0 1000 s: (160.5...168.5)

Aneroid pressure h: -

rpm : 500 Speed

Del.quantity cm3/: 92.5...94.5

1000 s: (90.5...96.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.50

Speed rpm : 1145...1160

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 205.0...215.0 1000 s: (202.0...218.0)

Rack travel in mm : 19.50...21.00

Remarks:

F18

Note remarks

Test sheet : MAN 20,9 j : 10.02.89 Edition

Replaces

Test oil : ISO-4113

Combination no. : 0 401 840 109

Injection pump

Pump designation : PE12P120A520/4LS857

: 0 411 820 035 EP type number

Governor

Governor design. : RQV250...1050PA889

: 0 421 813 696 Governer no.

Customer-spec. information Customer : MAN

: D2542TE60 Engine

1st version kW : 361.0 : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Openina

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 074

Outside diameter x Wall thickness

: 8.00X1.50X1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ___

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.00...3.10 : (2.95...3.15) Rack travel in mm : 9.00...12.00 Firing order : 12- 1- 5- 9- 8- 3-4- 11- 10- 2- 6- 7

: 0-45-60-105-120-165-180-225-240-285-300-Phasing

Phasing 345

: 0.50 (0.75) Tolerance + - °

Time to cyl. no. : 12

BASIC SETTING

rpm: 1050 1st speed

Rack travel in mm : 11.80...11.90

Del.quantity cm3/: 14.5...14.7

100 s: (14.2...15.0)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 250.0 2nd speed Rack travel in mm: 6.5...6.7 Del.quantity cm3/: 1.7...2.3

100 s: (1.4...2.6)

cm3 : 0.8 Spread 100 s: (1.2)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

rpm : 250 1st speed

travel mm : 0.80...1.20

2nd speed : 700 rpm

: 4.60...5.00 travel mm

1050 3rd speed rom

: 7.40...7.60 travel mm

: 1400 4th speed rpm

: 11.00...12.00 travel mm

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1125 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

F19

Del.quantity : 145.0...147.0 1000 : (142.0...150.0) : 5.00 Spread cm3 1000 : (9.00)

RATED SPEED

1st version Control lever

position degrees: 58...66

Testing:

1st rack travel in: 10.80 rpm : 1090...1100 Speed

2nd rack travel in: 4.00 rpm : 1185...1215 Speed

4th rack travel in: 1400 Speed rpm : 0.00...1.00

LOW IDLE 1 Control Lever

position degrees: 8...16

Testing:

Speed : 100 rpm Minimum rack trave: 8.10 : 250 Speed rom

Rack travel in mm : 6.50...6.70

CONSTANT REGULATION

rpm : 400...520 Speed

START CUT-OUT

1/min: 190 (210) Speed

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 10.80

rpm : 1090...1100 Speed

STARTING FUEL DELIVERY

rpm : 100 Speed

LOW IDLE

Speed : 250 rpm Rack travel in mm : 6.50...6.70 Del.quantity cm3/: 17.0...23.0 1000 s: (14.0...26.0) Spread cm3 : 8.00

1000 s: (12.00)

Remarks:

F20

: MAN-NR. 2-7906

APPLICATION

Rail car

Note remarks

Test sheet Edition : FIA 13,8 a : 10.02.89 Replaces : 1.9.88 Test oil : ISO-4113

Combination no. : 0 401 846 225

Injection pump

Pump designation : PE6P120A720RS167 EP type number : 0 411 826 053 Governor

Governor design. : RQ225/1100PA118 : 0 421 801 027 Governer no.

Customer-spec. information Customer : IVECO-FIAT

Engine : 221A

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Opening |

: 207...210 pressure, bar

Orifice plate

diameter mm : 0.8

Test lines : 1 680 750 067

Outside diameter

x Wall thickness

x Length mm : 6.00X1.50X1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY Test pressure, bar: 25...27

Prestroke mm : 2.00...2.10 : (1.95...2.15)

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

Phasina : 0-60-120-180-240-300

Tolerance + - 0 : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1100

Rack travel in mm : 11.10...11.20

Del.guantity cm3/: 17.0...17.2

100 s: (16.7...17.5)

cm3 : 0.5Spread

100 s: (0.9)

2nd speed rpm : 225.0 Rack travel in mm : 7.5...7.7

Del.quantity cm3/: 1.7...2.3 100 s: (1.4...2.6)

Spread cm3 : 0.8

100 s: (1.2)

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 600 Rack travel in mm : 15.20...16.40

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1100 Speed

: 170.0...172.0 Del.quantity 1000 : (167.0...175.0)

: 5.00 Spread cm3

1000 : (9.00)

RATED SPEED

1st version

Setting point:

rpm Rack travel in mm : 15.8

Testing:

1st rack travel in: 10.10

Speed rpm : 1145...1160

2nd rack travel in: 4.00

Speed rpm : 1195...1225 4th rack travel in: 1350

rpm : 0.00...1.00Speed

LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 225 Rack travel in mm : 7.6

Testing:

Speed rpm : 100 Minimum rack trave: 9.10

Speed rpm: 225
Rack travel in mm: 7.50...7.70
Rack travel in mm: 2.00
Speed rpm: 365...405

TORQUE CONTROL

Dimension a mm : ~

Torque control curve - 1st version

1st speed rpm : 1100 Rack travel in m: 11.10...11.20

2nd speed rpm : 600

Rack travel in m: 11.10...11.30

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 10.10 Speed rpm : 1145...1160 Speed

STARTING FUEL DELIVERY

Speed rpm : 100

Remarks:

Note remarks

Test sheet : FIA 13,8 a6 Edition : 10.02.89

Replaces : 3.83 Test oil : ISO-4113

Combination no. : 0 401 846 356

Injection pump

Pump designation : PE6P120A720RS167 EP type number : 0 411 826 053

Governor

: RQ225/1100PA323R Governor design.

: 0 421 801 065 Governer no.

Customer-spec. information : IVECO-FIAT Customer

: 221A Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Openina (

pressure, bar : 207...210

Orifice plate

diameter mm : 0.8

Test lines : 1 680 750 067

Outside diameter

x Wall thickness

: 6.00x1.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.00...2.10 : (1.95...2.15)
Rack travel in mm : 9.00...12.00

Phasing

: 0-60-120-180-240-300

: 1-5-3-6-2-4

Tolerance + - 0

Firing order

: 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1100

Rack travel in mm : 11.10...11.20

Del.quantity cm3/: 17.0...17.2

100 s: (16.7...17.5)

cm3 : 0.5Spread

100 s: (0.9)

2nd speed rpm : 225.0 Rack travel in mm : 7.5...7.7

Del.quantity cm3/: 1.7...2.3

100 s: (1.4...2.6) cm3 : 0.8Spread

100 s: (1.2)

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

Speed rpm : 550 Rack travel in mm : 15.20...16.40

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

: 170.0...172.0 Del.quantity

1000 : (167.0...175.0)

: 5.00 cm3 Spread

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed man

Rack travel in mm: 15.8

Testing:

1st rack travel in: 10.10

rpm : 1145...1160 Speed

2nd rack travel in: 4.00

: 1190...1220 Speed rpm

4th rack travel in: 1350

F23

Speed rpm : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 225 Rack travel in mm : 7.6

Testing:

Speed : 100 rom Minimum rack trave: 9.10

Speed rpm: 225
Rack travel in mm: 7.50...7.70
Rack travel in mm: 2.00
Speed rpm: 365...405

TORQUE CONTROL

Dimension a mm

Torque control curve - 1st version 1st speed rpm : 1100 Rack travel in m: 11.10...11.20

2nd speed rpm : 550

Rack travel in m: 11.10...11.30

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 10.10

rpm : 1145...1160 Speed

STARTING FUEL DELIVERY

Speed rom : 100

Remarks:

Check electrically unlatched starting fuel delivery (EES) with 24 volt.

On activation of the starting solenoid, the start position must be reached.

BUSCH INJ. PUMP TEST SPECIFICATIONS Note remarks : FIA 13,8a10 : 10.02.89 Test sheet Edition Replaces Test oil : ISO-4113 Combination no. : 0 401 846 365 Injection pump Pump designation : PE6P120A720RS167 EP type number : 0 411 826 053 Governor Governor design. : RQ225/1:100FA323 : 0 421 80i 365 Governer no. Customer-spec. information Customer : IVECO-FIAT Engine : 221A TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 417 413 025 Inlet press., bar: 1.50 Test nozzle holder : 1 688 901 019 assembly Opening pressure, bar : 207...210 Orifice plate : 0,8 diameter mm Test Lines : 1 680 750 067 Outside diameter x Wall thickness : 6.00x1.50x1000 x Length mm (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values BEGINNING OF DELIVERY Test pressure, bar: 25...27

: 2.00...2.10

Rack travel in mm : 9.00...12.00

: (1.95...2.15)

: 1-5-3-6-2-4 Firing order Phasing : 0-60-120-180-240-300 Tolerance + - 0 : 0.50 (0.75) Time to cyl. no. : 1 BASIC SETTING 1st speed rpm: 1100 Rack travel in mm : 11.10...11.20 Del.quantity cm3/: 17.0...17.2 100 s: (16.7...17.5) cm3 : 0.5Spread 100 s: (0.9) 2nd speed rpm : 225.0 Rack travel in mm : 7.5...7.7 Del.quantity cm3/ : 1.7...2.3 100 s: (1.4...2.6) cm3 : 0.8 Spread 100 s: (1.2) GUIDE SLEEVE POSITION Control-lever position Degree: -1 Speed rpm: 550 Rack travel in mm: 15.20...16.40 FULL LOAD DELIV. AT FULL LOAD STOP 1st version rpm : 1100 Speed : 170.0...172.0 Del.quantity : (167.0...175.0) : 5.00 1000 Spread cm3 1000 : (9.00) RATED SPEED 1st version Setting point: Speed rpm Rack travel in mm: 15.8 Testing: 1st rack travel in: 10.10 Speed rpm : 1145...1160 2nd rack travel in: 4.00 rpm : 1195...1225 Speed 4th rack travel in: 1350

Prestroke mm

rpm : 0.00...1.00Speed

LOW IDLE 1

Setting point w/out bumper spring

Speed rpm: 225 Rack travel in mm: 7.6

Testing:

Speed rpm : 100 Minimum rack trave: 9.10
Speed rpm : 225
Rack travel in mm : 7.50...7.70
Rack travel in mm : 2.00
Speed rpm : 365...405

TORQUE CONTROL

Dimension a mm

Torque control curve - 1st version
1st speed rpm : 1100
Rack travel in m: 11.10...11.20
2nd speed rpm : 550
Rack travel in m: 11.10...11.30

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 10.10

rpm : 1145...1160 Speed

STARTING FUEL DELIVERY

Speed : 100 rpm

Remarks:

Check electrically unlatched starting fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,

the start position must be reached.

Note remarks

Test sheet : FIA 13,8 c Edition : 10.02.89

Replaces : 6.85 : ISO-4113 Test oil

: 0 401 846 409 Combination no.

Injection pump

Pump designation : PE6P120A720RS214 EP type number : 0 411 826 060

Governor

Governor design. : RQV425...1050PA438 Governor no. : 0 421 813 273

Customer-spec. information

: IVECO-UNIC Customer

: 8215,22,520 Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test Lines : 1 680 750 067

Outside diameter

x Wall thickness

: 6.00X1.50X1000 x Length mm

(A) Injection pump setting values Insp. Values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.00...2.10

: (1.95...2.15)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - 0 : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1050

Rack travel in mm : 10.10...10.20

Del.guantity cm3/: 16.7...16.9

100 s: (16.4...17.2)

cm3 : 0.5 Spread

100 s: (0.9)

rpm : 425.0 2nd speed

Rack travel in mm : 6.2...6.4

Del.quantity cm3/: 2.5...3.1 100 s: (2.2...3.4)

Spread cm3 : 0.8 100 s: (1.2)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 425 : 1.20...1.40 travel mm

600 2nd speed rom :

: 3.80...4.60 travel mm

rpm : 900 3rd speed

: 6.40...6.70 travel mm

4th speed rpm : 1050

: 7.60...7.80 travel mm

rpm : 1400 5th speed

: 11.00...12.00 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1115

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

: 167.0...169.0 Del.quantity

1000 : (164.0...172.0) : 5.00 Spread

cm3

: (9.00) 1000

RATED SPEED

1st version Control lever

position degrees: 54...62

Testing:

1st rack travel in: 9.10

Speed rpm : 1090...1100

2nd rack travel in: 4.00 Speed rpm : 1190...1220

4th rack travel in: 1300

Speed rpm : 0.00...1.00

LOW IDLE 1 Control lever

position degrees: 8...16

Testing:

Speed rpm : 100 Minimum rack trave: 7.80 Speed rpm : 425

Rack travel in mm : 6.20...6.40

CONSTANT REGULATION

Speed rpm : 425...525

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 9.10

Speed rpm : 1090...1100

INTERMEDIATE RATED SPEED Rack travel in mm : 4.00

STARTING FUEL DELIVERY

Speed rpm: 100

Remarks:

Check electrically unlatched starting fuel delivery (EES) with 24 volt.

On activation of the starting solenoid, the start position must be reached.

Note remarks

Test sheet : SCA 8,0 e 1 Edition : 09.03.87 Replaces : 7.84 : ISO-4113 Test oil

Combination no. : 0 401 846 423

Injection pump

Pump designation : PE6P110A720RS393 EP type number : 0 411 816 131

Governor

Governor design. : RQV250...1200PA469

: 0 421 813 226 Governer no.

Customer-spec, information Customer : SCANIA

: DN8 01 Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening |

: 172...175 pressure, bar

: 1 680 750 015 Test lines

Outside diameter x Wall thickness

: 6.00X1.50X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 3.00...3.10 Prestroke mm

: (2.95...3.15)

Rack travel in mm : 9.00...12.00 Firing order : 1-5- 3- 6- 2- 4 Phasing

: 0-60-120-180-240-300

Tolerance → - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 600

Rack travel in mm : 12.00...12.10

Del.quantity cm3/: 8.7...8.9

100 s: (8.5...9.1)

cm3 : 0.5Spread

100 s: (0.7)

rpm : 225.0 2nd speed Rack travel in mm : 6.9...7.1 Del.quantity cm3/: 1.1...1.5 100 s: (-)

cm3 : 0.2 Spread 100 s: (0.4)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 200

: 0.70...0.90 travel mm

2nd speed : 500 rpm

travel mm : 3.00...3.50 3rd speed rpm : 800

: 5.10...5.30 travel mm

1200 4th speed rpm : 8.20...8.40 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1200 Speed Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 600 Speed

: 87.0...89.0 Del.quantity 1000 : (85.0...91.0)

: 5.00 cm3 Spread

1000 : (7.00)

RATED SPEED

1st version

Control Lever

position degrees: 47...55

Testing:

1st rack travel in: 11.00

: 1240...1250 Speed rpm

2nd rack travel in: 4.00

: 1325...1355 Speed rpm

4th rack travel in: 1450

rpm : 0.00...1.00Speed

LOW IDLE 1 Control lever

position degrees: 9...17

Testing:

Speed : 100 rpm Minimum rack trave: 8.40

Speed rpm : 225

Rack travel in mm : 6.90...7.10 Rack travel in mm : 2.00

: 335...395 Speed rpm

FUEL DELIVERY CHARACTERISTICS

1st version

: 1200 Speed rpm

Del.quantity cm3/: 98.5...103.5 1000 s: (96.0...106.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.00

rpm : 1240...1250 Speed

STARTING FUEL DELIVERY

Speed rom : 100

Del.quantity cm3/: 140.0...190.0

1000 s: (-)

Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 225 Rack travel in mm : 6.90...7.10 Del.quantity cm3/: 11.0...15.0 Spread cm3 : 2.00

1000 s: (4.00)

Remarks:

Delivery-valve spring pre-tension = 2.40...2.60 mm.

G02

Permissible alteration from 2.20...2.90

ADDITIONAL INFORMATION

Check and set without ROBO diaphragam

For comb. with letter index see VDT-I-400/116.

For sealing see VDT-I-400/117.

Scania test specifications taken over on Aug. 22, 1983

Start of delivery - engine: 22° before

Firing sequence of engine: 1-5-3-6-2-4.

Note remarks

: SCA 8,0 e : 09.03.87 Test sheet Edition : 7.84 Replaces

: ISO-4113 Test oil

: 0 401 846 424 Combination no.

Injection pump

Pump designation : PE6P110A720RS393 EP type number : D 411 816 131

Governor

Governor design. : RQV200...1200PA467

: 0 421 813 224 Governer no.

Customer-spec. information Customer : SCANIA

Engine : DN8 01

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening.

pressure, bar : 172...175

: 1 680 750 015 Test Lines

Outside diameter x Wall thickness

x Length mm : 6.00x1.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 3.00...3.10 : (2.95...3.15) Prestroke mm

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-Firing order

Phasing : 0-60-120-180-240-300

Tolerance + - 0 : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 600

Rack travel in mm : 12.00...12.10

Del.quantity cm3/: 8.7...8.9

100 s: (8.5...9.1)

Spread cm3 : 0.5

100 s: (0.7)

2nd speed rpm : 225.0

Rack travel in mm: 6.9...7.1 Del.quantity cm3/: 1.1...1.5

100 s: (-) cm3 : 0.2

Spread 100 s: (0.4)

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1200 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

: 87.0...89.0 Del.quantity 1000 : (85.0...91.0)

: 5.00 Spread cm3

1000 : (7.00)

RATED SPEED

1st version

Control lever

position degrees: 57...65

Testing:

1st rack travel in: 11.00 Speed rpm : 1240...1250 2nd rack travel in: 4.00

rpm : 1365...1395 Speed

4th rack travel in: 1500

rpm : 0.00...1.00Speed

LOW IDLE 1

Control lever

position degrees: 12...20

Testing:

: 100 Speed rpm Minimum rack trave: 8.40

Speed rpm: 225
Rack travel in mm: 6.90...7.10
Rack travel in mm: 2.00

rpm : 440...500 Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Speed : 1200 rom

Del.quantity cm3/: 98.5...103.5 1000 s: (96.0...106.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 11.00

rpm : 1240...1250 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity_cm3/ : 140.0...190.0

1000 s: (-)

Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 225
Rack travel in mm : 6.90...7.10
Del.quantity cm3/ : 11.0...15.0
Spread cm3 : 2.00
1000 s: (4.00)

Remarks:

Delivery-valve spring pre-tension = 2.40...2.60 mm.

Permissible alteration from 2.20...2.90

ADDITIONAL INFORMATION

Check and set without ROBO diaphragam

For comb. with letter index see

VDT-I-400/116.

For sealing see VDT-I-400/117.

Scania test specifications taken over on Aug. 22, 1983

Start of delivery - engine: 22° before

TDC

Firing sequence of engine:

1-5-3-6-2-4.

G04

Note remarks

: SCA 8,0 n 1 : 09.03.87 Test sheet Edition

Replaces : 7.84 : ISO-4113 Test oil

: 0 401 846 479 Combination no.

Injection pump

Pump designation : PE6P110A720RS393 EP type number : 0 411 816 131

Governor

Governor design. : RQ750PA528 : 0 421 801 126 Governer no.

Customer-spec. information Customer : SCANIA

Engine : DN8 01

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter x Wall thickness

x Length mm : 6.00X1.50X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 3.00...3.10 Prestroke mm

: (2.95...3.15) Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - 0 : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

rpm : 7001st speed

Rack travel in mm : 12.00...12.10

Del.quantity cm3/: 9.0...9.2

100 s: (8.8...9.4)

Spread cm3 : 0.5

100 s: (0.7)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

90.0...92.0 Del.quantity 1000 : (88.0...94.0)

: 5.00 Spread cm3

1000 : (7.00)

RATED SPEED

1st version

Testing:

1st rack travel in: 11.60 rpm : 750...755 Speed

2nd rack travel in: 4.00

Speed rpm : 778...788 4th rack travel in: 1500 Speed rpm : 0.00...1.00

LOW IDLE 1

Testing:

Speed rpm Rack travel in mm : 2.00

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.60

rpm : 750...755 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 140.0...190.0 Rack travel in mm : 20.00...21.00

Remarks:

ADDITIONAL INFORMATION

Check and set without ROBO diaphragam

For comb. with letter index see VDT-I-400/116.

For sealing see VDT-I-400/117.

Scania test specifications taken over on Aug. 22, 1983

Start of delivery - engine: 22° before

Firing sequence of engine: 1-5-3-6-2-4.

APPLICATION

Generator

Note remarks

: BET 8,8 b 1 : 10.02.89 Test sheet Edition : 12.2.88 Replaces : ISO-4113 Test oil

Combination no. : 0 401 846 489

Injection pump

Pump designation : PE6P120A320RS377 EP type number : 0 411 826 108

Governor

: RQV275...1200PA425-2 Governor design.

: 0 421 813 403 Governer no.

Customer-spec. information Customer : RVI

Engine : MIDS 062030

: 158.1 1st version kW : 2400 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 1 688 901 019

Opening

pressure, bar : 207...210

Orifice plate

: 0,8 diameter mm

Test lines : 1 680 750 067

Outside diameter x Wall thickness

: 6.00x1.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90 : (2.75...2.95)

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

rpm: 1200 1st speed

Rack travel in mm : 12.60...12.70

Del.quantity cm3/: 15.0...15.2

100 s: (14.7...15.5)

cm3 : 0.5Spread

100 s: (0.9)

2nd speed rpm : 275.0
Rack travel in mm : 5.4...5.6
Del.quantity cm3/ : 1.1...1.7
100 s: (0.8...2.0)

cm3 : 0.8Spread

100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rom : : 1.00...1.20 travel mm

2nd speed : 425 rpm

travel mm : 3.00...3.50 : 900 3rd speed rpm

: 5.60...5.90 travel mm

: 1200 4th speed rpm

travel mm : 7.60...7.70

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

Speed rpm : 1275 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1200 Speed Aneroid pressure h: 700

Del.quantity : 150.0...155.0)

: 5.00 Spread cm3 1000 : (9.00) RATED SPEED 1st version Control Lever position degrees: 60...68 Testing: 1st rack travel in: 11.60 Speed rpm : 1245...1255 2nd rack travel in: 4.00 rpm : 1375...1405 Speed 4th rack travel in: 1500 rpm : 0.00...1.00 Speed LOW IDLE 1 Control lever position degrees: 6...14 Testina: : 200 Speed rpm Minimum rack trave: 8.10 rpm : 275 Speed Rack travel in mm : 5.40...5.60 CONSTANT REGULATION rpm : 275...375 Speed Aneroid/Altitude Compensator Test 1st version Setting pm : 500 hPa : 700 Speed rom Pressure : 12.60...12.70 Rack travel mm Measurement Speed 1/min: 500 1st pressure hPa : -Rack travel in m: 11.50...11.60 2nd pressure hPa : 190
Rack travel in m: 12.20...12.30
3rd pressure hPa : 170
Rack travel in m: 11.70...11.90 START CUT-OUT 1/min: 195 (215) Speed FUEL DELIVERY CHARACTERISTICS 1st version

Del.quantity cm3/: 76.0...78.0 1000 s: (73.0...81.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: -1.00 rpm : 1245...1255 Speed STARTING FUEL DELIVERY Speed rom : 100 LOW IDLE Speed : 275 rpm Rack travel in mm : -7.00...-7.20 Del.quantity cm3/: 11.0...17.0 1000 s: (8.0...20.0) Spread cm3 : 8.00 1000 s: (12.00) Remarks: **APPLICATION**

Omnibus

GD8

Speed

Aneroid pressure h: -

rpm : 500

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks : VOL 7,1 a 1 : 10.02.89 Test sheet Edition : 12.9.86 Replaces : ISO-4113 Test oil Combination no. : 0 401 846 506 Injection pump Pump designation : PE6P110A320RS483-1 EP type number : 0 411 816 160 Governor Governor design. : RQV250...1200PA499-2 : D 421 813 461 Governer no. Customer-spec. information Customer : VOLVO Engine : TD71FS : 180.0 1st version kW : 2400 Rated speed TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 417 413 025 Inlet press., bar: 1.50 Test nozzle holder assembly : 0 681 343 009 **Openina** pressure, bar : 172...175 Test lines : 1 680 750 015 Outside diameter x Wall thickness x Length mm : 6.00x1.50x600 (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

Time to cyl. no. : 1 BASIC SETTING 1st speed rpm: 700 Rack travel in mm : 13.10...13.20 Del.quantity cm3/: 14.2...14.4 100 s: (13.9...14.7) Spread cm3 : 0.4100 s: (0.7) rpm : 250.02nd speed Rack travel in mm : 5.3...5.5 Del.quantity cm3/: 1.6...2.0 100 s: (-) cm3 : 0.3 Spread 100 s: (0.6) (B) Setting of injection pump with governor GUIDE SLEEVE TRAVEL rpm : 250 1st speed : 1.20...1.30 travel mm 2nd speed : 300 mar 1.70...2.00 travel mm rpm : 400 3rd speed 2.50...2.80 travel mm : 700 4th speed rpm travel mm : 4.40...4.70 rpm : 1200 5th speed : 7.60...7.80 travel mm GUIDE SLEEVE POSITION Control-Lever position Degree: -1 rpm : 1300 Rack travel in mm : 15.20...17.80 FULL LOAD DELIV. AT FULL LOAD STOP 1st version rpm : 700 Speed Aneroid pressure h: 900 Del.quantity : 742.0...147.0)

Firing order

Tolerance + - °

Phasing

: 1-5-3-6-2-4

: 0-60-120-180-240-300

: 0.50 (0.75)

G09

per values

BEGINNING OF DELIVERY

Prestroke mm

Test pressure, bar: 25...27

Rack travel in mm : 9.00...12.00

: 3.00...3.10

: (2.95...3.15)

Spread cm3 : 4.00 1000 : (7.50)RATED SPEED 1st version Control Lever position degrees: 58...66 Testina: 1st rack travel in: 12.10 Speed rpm : 1240...1250 2nd rack travel in: 4.00 Speed rpm : 1385...1415 4th rack travel in: 1500 rpm : 0.00...1.00Speed LOW IDLE 1 Control lever position degrees: 5...13 Testing: Speed rpm : 100 Minimum rack trave: 6.80 rpm : 250 Rack travel in mm : 5.30...5.50 CONSTANT REGULATION rpm : 300...410 Speed Aneroid/Altitude Compensator Test 1st version Setting : 500 Speed rpm hPa : 900 Pressure : 13.10...13.20 Rack travel mm Measurement 1/min : 500 Speed 1st pressure hPa : -Rack travel in m: 10.20...10.30 2nd pressure hPa : 700 Rack travel in m: 12.90...13.00 3rd pressure hPa : 300 Rack travel in m: 10.60...10.80 FUEL DELIVERY CHARACTERISTICS 1st version

Del.quantity cm3/: 85.0...88.0 1000 s: (82.0...91.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 12.10 Speed rpm : 1240...1250

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 170.0...200.0 1000 s: (-)

Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 250
Rack travel in mm : 5.30...5.50
Del.quantity cm3/ : 16.0...20.0
Spread cm3 : 3.00
1000 s: (6.00)

Remarks:

Delivery-valve spring pre-tension = 2.40...2.60 mm.
Permissible alteration from 2.20...2.90 mm

G10

Speed

Aneroid pressure h: 900

Aneroid pressure h: -

man

Speed rpm : 1000 Del.quantity cm3/ : 134.0...138.0

1000 s: (131.0...141.0)

: 700

Note remarks

Test sheet : ENA 10,1 b : 07.02.89 Edition : 25.3.88 Replaces Test oil : ISO-4113

: 0 401 846 546 Combination no.

Injection pump

Pump designation : PE6P100A820LS130 EP type number : D 411 806 179

Governor

Governor design. : RQV250...1050PA807-1

: D 421 813 665 Governer no.

Customer-spec. information Customer : ENASA

: 95 A1 BX Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening |

pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter x Wall thickness

: 6.00x1.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.80...2.90 Prestroke mm

: (2.75...2.95)

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

Phasing : 0-60-120-180-240-300

Tolerance + - 0 : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

rpm: 1030 1st speed

Rack travel in mm : 11.70...11.80

Del.quantity cm3/: 11.4...11.6

100 s: (11.2...11.8)

cm3 : 0.3Spread

100 s: (0.6)

2nd speed rpm : 250.0 Rack travel in mm : 7.9...8.1 Del.quantity cm3/ : 1.8...2.2

100 s: (1.5...2.4)

cm3 : 0.3Spread 100 s: (0.5)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 250 1st speed : 0.90...1.30 travel mm

rpm : 350 2nd speed

travel mm : 1.60...2.20 : 700 3rd speed rpm

: 4.40...5.00 travel mm

1095 4th speed rpm travel mm

: 7.90...8.10 : 1185 5th speed rpm

travel mm : 8.80...9.20

GUIDE SLEEVE POSITION

Control-lever position Degree: -1

rpm : 1120 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1030 Speed

: 114.0...116.0 Del.quantity 1000 : (112.0...118.0)

: 3.50 Spread cm3

1000 : (6.00)

RATED SPEED

1st version Control lever position degrees: 41...49 Testing: 1st rack travel in: 10.70 Speed rpm: 1090...1100 2nd rack travel in: 4.00 Speed rpm : 1170...1200 4th rack travel in: 1300 rpm : 0.00...1.00Speed LOW IDLE 1 Control lever position degrees: 12...20 Testina: Speed rpm : 100 Minimum rack trave: 7.50 Speed rpm : 250 Rack travel in mm : 5.90...6.10 CONSTANT REGULATION : 250...400 Speed rpm START CUT-OUT 1/min: 170 (150) Speed **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 10.70 rpm : 1090...1100 Speed STARTING FUEL DELIVERY LOW IDLE Speed rpm : 250 Rack travel in mm : 5.90...6.10 Remarks: **APPLICATION**

Special-purpose vehicle

Note remarks

Test sheet : ENA 11,9 a1 : 24.02.89 Edition : 19.5.88 Replaces Test oil : ISO-4113

Combination no. : 0 401 846 550

Injection pump

Pump designation : PE6P120A320RS257 EP type number : 0 411 826 075

Governor

Governor design. : RQV250...1050PA808

Governer no. : 0 421 813 553

Customer-spec. information Customer : ENASA

: 96 T1 CX Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 1 688 901 019

Openina

: 207...210 pressure, bar

Orifice plate

: 0,8 diameter mm

: 1 680 750 067 Test lines

Outside diameter x Wall thickness

: 6.00x1.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.80...2.90 Prestroke mm : (2.75...2.95)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - 0 : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1030

Rack travel in mm : 10.90...11.00

Del.quantity cm3/: 20.9...21.1

100 s: (20.6...21.4)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 250.0 2nd speed Rack travel in mm : 5.6...5.8 Del.quantity cm3/: 1.7...2.3

100 s: (1.4...2.6)

Spread cm3 : 0.8100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250

travel mm : 1.00...1.40 rpm : 350

2nd speed

travel mm : 1.70...2.30

3rd speed rpm : 700

: 4.50...5.10 travel mm 1095

4th speed rpm

: 8.20...8.40 travel mm

: 1175 5th speed rpm

: 9.10...9.50 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1090

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1030 Speed Aneroid pressure h: 900

: 209.0...211.0 Del.quantity

1000 : (206.0...214.0)

G13

Spread cm3 : 5.00

1000 : (9.00)

RATED SPEED

1st version Control lever

position degrees: 48...56

Testing:

1st rack travel in: 9.90

Speed rpm : 1090...1100 2nd rack travel in: 4.00

rpm : 1160...1190 Speed

4th rack travel in: 1300

Speed rpm : 0.00...1.00

LOW IDLE 1

Control Lever

position degrees: 13...21

Testing:

Speed rpm : 100 Minimum rack trave: 7.20 : 250 rpm

Rack travel in mm : 5.60...5.80

CONSTANT REGULATION

rpm : 250...370 Speed

Aneroid/Altitude Compensator Test

1st version Setting

Speed : 500 rpm

hPa : 900 Pressure Rack travel mm : 10.90...11.00

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 8.30...8.70

2nd pressure hPa : 510 Rack travel in m: 10.40...10.50

3rd pressure hPa : 300 Rack travel in m: 9.20...9.40

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900

rpm_ : 650

Del.quantity cm3/: 187.0...193.0 1000 s: (184.0...196.0)

Aneroid pressure h: -

rpm : 500 Speed

G14

Del.quantity cm3/: 119.0...121.0 1000 s: (116.0...124.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.90

rpm : 1090...1100 Speed

STARTING FUEL DELIVERY

rpm : 100

Det.quantity cm3/: 140.0...160.0 1000 s: (136.0...164.0)

Rack travel in mm : 19.50...21.00

Remarks:

Check electrically unlatched starting

fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,

the start position must be reached.

APPLICATION

Special-purpose vehicle

Note remarks

: SCA 11,0 y : 21.05.87 Test sheet Edition Replaces : 9.3.87 Test oil : ISO-4113

Combination no. : 0 401 846 764

Injection pump

Pump designation : PE6P110A720RS3115 EP type number : 0 411 816 735

Governor

Governor design. : RQV200...1100PA468

: 0 421 813 364 Governer no.

Customer-spec. information

: SAAB-SCANIA Customer

Engine : DN11 01

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter

x Wall thickness

x Length mm : 6.00x1.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 3.30...3.40 Prestroke mm

: (3.25...3.45)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4 Firing order

Phasing : 0-60-120-180-240-300

Tolerance + - 0 : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 600

Rack travel in mm : 12.40...12.50

Del.quantity cm3/: 11.9...12.1

100 s: (11.7...12.3)

cm3 : 0.5 Spread

100 s: (0.7)

rpm : 225.0 2nd speed

Rack travel in mm : 5.4...5.6 Del.quantity cm3/ : 2.0...2.4

100 s: (-)

cm3 : 0.2 Spread 100 s: (0.4)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

1st speed rom : 225

0.90...1.00 travel mm

2nd speed rpm :

: 360 : 2.60...2.90 : 560 travel mm

3rd speed rpm

: 4.30...4.60 travel mm

4th speed rpm

: 1150 : 8.40...8.60 travel mm

: 1250 5th speed rpm

: 9.50...9.80 travel mm

GUIDE SLEEVE POSITION

Control-Lever position

Degree: -1 Speed rpm : 1150 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed : 600 rpm

Del.quantity : 119.0...121.0

1000 : (117.0...123.0)

5.00 Spread cm3

: (7.00) 1000

RATED SPEED

1st version Control lever

position degrees: 57...65

Testing:

1st rack travel in: 11.40

Speed rpm : 1140...1150

2nd rack travel in: 4.00

rpm : 1250...1280 Speed

4th rack travel in: 1400

Speed rpm : 0.00...1.00

LOW IDLE 1 Control lever

position degrees: 6...14

Testina:

: 100 Speed rpm Minimum rack trave: 6.90

speed rpm : 225
Rack travel in mm : 5.40...5.60
Rack travel in mm : 2.00
Speed

Speed : 330...390 rom

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 1100 Del.quantity cm3/ : 119.5...124.5 1000 s: (118.0...126.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 11.40 Speed rpm : 1140...1150 Speed

INTERMEDIATE RATED SPEED

Rack travel in mm: 4.00

STARTING FUEL DELIVERY

Speed : 100 rpm

Del.quantity cm3/: 240.0...290.0 1000 s: (-) Rack travel in mm: 20.00...21.00

LOW IDLE

Remarks:

Delivery-valve spring pre-tension

3.2...3.4 mm.

Permissible alteration of 3.0...3.5 mm

ADDITIONAL INFORMATION

Check and set without ROBO diaphragam

For comb. with Letter index see VDT-I-400/116.

For sealing see VDT-I-400/117.

Scania tēst specifications taken over

on April 10, 1984

Start of delivery - engine: 21° before

Firing sequence of engine:

1-5-3-6-2-4.

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : PER 12,2 c : 07.02.89 Edition Replaces Test oil : ISO-4113 Combination no. : 0 402 046 797 Injection pump Pump designation : PES6P120A320RS3212 EP type number : 0 412 026 731 Governor Governor design. : RQV250..1050PA794-2 : 0 421 813 698 Governer no. Customer-spec, information : PERKINS Customer Engine : EAGLE TX 1st version kW : 240.0 : 2100 Rated speed TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 417 413 025 Inlet press., bar: 1.50 Test nozzle holder : 1 688 901 019 assembly **Opening** : 207...210 pressure, bar Orifice plate diameter mm : 0,8 Test lines : 1 680 750 067 Outside diameter x Wall thickness

Outside diameter
x Wall thickness
x Length mm : 6.00x1.50x1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values

DESIMITED OF ASILITIES

BEGINNING OF DELIVERY Test pressure, bar: 25...27

Prestroke mm : 4.50...4.60 : (4.45...4.65) Rack travel in mm : 9.00...12.00 Firing order : 1-4-2-6-3-5 Phasing : 0-60-120-180-240-300 Tolerance + - 0 : 0.50 (0.75) Time to cyl. no. : 1 BASIC SETTING rpm: 900 1st speed Rack travel in mm : 14.60...14.70 Del.quantity cm3/: 23.9...24.1 100 s: (23.6...24.4) cm3 : 0.6 Spread 100 s: (0.9) rpm : 250.02nd speed Rack travel in mm: 5.9...6.1 Del.quantity cm3/: 1.3...1.7 100 s: (1.0...2.0) Spread cm3 : 0.3100 s: (0.6) (B) Setting of injection pump with governor GUIDE SLEEVE TRAVEL 1st speed rpm : 250 travel mm : 0.90...1.30 rpm : 350 2nd speed : 2.90...3.50 travel mm : 700 3rd speed rpm travel mm : 4.00...4.60 rpm : 1000 4th speed travel mm 7.40...7.60 : 1100 5th speed rpm : 8.80...9.20 travel mm GUIDE SLEEVE POSITION Control-Lever position Degree: -1 rpm : 1070 Speed Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

rpm : 900

Aneroid pressure h: 1200

1st version

Speed

Del.quantity : 239.0...244.0)

: 6.00 Spread cm3 1000 : (9.00)

RATED SPEED

1st version Control lever

position degrees: 50...58

Testing:

1st rack travel in: 13.60 rpm : 980...990 Speed 2nd rack travel in: 4.00 rpm : 1085...1115 Speed

4th rack travel in: 1250

rpm : 0.00...1.00Speed

LOW IDLE 1 Control Lever

position degrees: 16...24

Testing:

Speed rpm : 100 Minimum rack trave: 7.50 : 250 Speed rom

Rack travel in mm : 5.90...6.10

CONSTANT REGULATION

rpm : 250...550 Speed

Aneroid/Altitude Compensator Test

1st version Setting

: 500 Speed rpm hPa : 1200 Pressure

Rack travel mm : 14.60...14.70

Measurement

1/min : 500 Speed

1st pressure hPa : -

Rack travel in m: 12.20...12.30

2nd pressure hPa : 900

Rack travel in m: 14.10...14.20

3rd pressure hPa : 510

Rack travel in m: 12.60...12.80

START CUT-OUT

1/min: 170 (190) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

G18

Aneroid pressure h: 1200

Speed rpm : 600 Del.quantity cm3/ : 243.0...249.0 1000 s: (240.0...252.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.60

rpm : 980...990 Speed

STARTING FUEL DELIVERY

: 100 Speed rpm

Del.quantity cm3/: 130.0...170.0 1000 s: (-)

Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 250 Rack travel in mm : 5.90...6.10

Remarks:

Delivery-valve spring pre-tension

3.2...3.4 mm.

Permissible alteration of 3.0...3.5 mm

Because of flattening, set the spring preload on new delivery-valve holders to 2.9...3.1 mm.

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks : UNI 9,5 a 2 : 07.02.89 Test sheet Edition Replaces : 30.9.88 : ISO-4113 Test oil : 0 402 046 800 Combination no. Injection pump Pump designation : PES6P110A720RS3140 EP type number : 0 412 016 716 Governor Governor design. : RQV275...1100PA501-6 Governer no. : 0 421 813 711 Customer-spec. information : IVECO-UNIC Customer : 8460.21.202/206 Engine : 176.0 1st version kW Rated speed : 2200 TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 417 413 025 Inlet press., bar: 1.50 Test nozzle holder : 0 681 343 009 assembly Opening. : 172...175 pressure, bar Test Lines : 1 680 750 015 Outside diameter x Wall thickness x Length mm : 6.00x1.50x600 (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

Phasing : 0-60-120-180-240-300 Tolerance + - 0 : 0.50 (0.75) BASIC SETTING 1st speed rpm: 1100 Rack travel in mm : 11.30...11.40 Del.guantity cm3/: 13.9...14.2 100 s: (13.6...14.4) Spread cm3 : 0.4100 s: (0.7) rpm : 275.0 2nd speed Rack travel in mm : 6.8...7.0 Del.quantity cm3/: 2.2...2.7 100 s: (1.9...2.9) Spread cm3 : 0.4100 s: (0.7) (B) Setting of injection pump with governor GUIDE SLEEVE TRAVEL 1st speed rpm : 250 travel mm : 1.00...1.20 2nd speed rpm : 400 : 2.70...3.00 travel mm rpm : 850 3rd speed 5.00...5.20 travel mm 1100 4th speed man : 6.80...7.00 travel mm : 1500 5th speed rpm : 11.00...12.00 travel mm GUIDE SLEEVE POSITION Control-lever position Degree: -1 rpm : 1260 Rack travel in mm : 15.20...17.80 FULL LOAD DELIV. AT FULL LOAD STOP 1st version Speed rpm : 1100 Aneroid pressure h: 700 Del.quantity : 139.0...142.0 1000 : (136.5...144.5) Spread cm3 : 4.00 1000 : (7.50)

Firing order

: 1-5-3-6-2-4

G19

per values

BEGINNING OF DELIVERY

Prestroke mm

Test pressure, bar: 25...27

Rack travel in mm : 9.00...12.00

: 3.20...3.30

: (3.15...3.35)

RATED SPEED

1st version Control lever

position degrees: 59...67

Testing:

1st rack travel in: 10.30 Speed rpm : 1140...1150 2nd rack travel in: 4.00

Speed rpm: 1245...1275 4th rack travel in: 1400 Speed

rpm : 0.00...1.00Speed

LOW IDLE 1

Control lever

position degrees: 11...19

Testina:

: 100 Speed ngn

Minimum rack trave: 8.40

rpm : 275 Speed

Rack travel in mm : 6.80...7.00

CONSTANT REGULATION

rpm : 280...525 Speed

Aneroid/Altitude

Compensator Test

1st version

Setting

: 500 Speed rpm

hPa : 700 Pressure

Rack travel mm : 11.30...11.40

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 9.90...10.10

2nd pressure hPa : 280

Rack travel in m: 10.80...10.90

3rd pressure hPa : 260

Rack travel in m: 10.30...10.50

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

rpm_ : 500 Speed

Del.quantity cm3/: 104.0...107.0

1000 s: (101.5...109.5)

BREAKAWAY

1st version

G20

1mm rack travel less than

full load rack tr: 10.30

rpm : 1140...1150 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 140.0...170.0

1000 s: (136.0...174.0)

Remarks:

Check electrically unlatched starting fuel delivery (EES) with 24 volt.

On activation of the starting solenoid, the start position must be reached.

Note remarks

Test sheet : MB 11,7 a12 Edition : 04.11.88

Replaces

Test oil : ISO-4113

Combination no. : 0 402 046 802

Injection pump

Pump designation : PES6P110A820LS3131-1

EP type number : 0 412 016 717

Governor

Governor design. : RQ300/1100PA722-2

: 0 421 801 459 Governer no.

Customer-spec. information

Customer : DAIMLER-BENZ

: OM447 Engine

1st version kW : 177.0

Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter x Wall thickness

: 6.00X1.50X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ___

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 4.30...4.40 Prestroke mm

: (4.25...4.45)

Rack travel in mm : 9.00...12.00

Firing order : 6-2-4-1-5-3

: 0-60-120-180-240-300 Phasina

Tolerance $+ - \circ : 0.50 (0.75)$

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm: 1100

Rack travel in mm : 11.00...11.10

Del.guantity cm3/: 13.9...14.1

100 s: (13.6...14.3)

Spread cm3 : 0.4

100 s: (0.8)

2nd speed rpm : 300.0 Rack travel in mm : 7.2...7.4 Del.quantity cm3/ : 1.4...2.0 100 s: (1.1...2.3)

cm3 : 0.4Spread

100 s: (0.8)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 600 Rack travel in mm : 13.00...14.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1100 Speed

Del.quantity : 139.0...141.0 1000 : (136.5...143.5)

: 4.00 cm3 Spread

1000 : (8.00)

RATED SPEED

1st version

Setting point:

Speed rpm Rack travel in mm : 13.5

Testing:

1st rack travel in: 10.00 Speed rpm : 1140...1150

2nd rack travel in: 4.00

rpm : 1185...1215 Speed

4th rack travel in: 1250

Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 300 Rack travel in mm : 7.3

Testing:

Speed rpm : 100 Minimum rack trave: 8.80

Speed rpm : 300 Rack travel in mm : 7.20...7.40

Rack travel in mm : 2.00 Speed rpm : 380...420

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 600 Del.quantity cm3/ : 116.0...119.0 1000 s: (113.0...122.0)

cm3 : 5.00Spread 1000 s: (9.00)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 10.00

rpm : 1140...1150 Speed

STARTING FUEL DELIVERY

rpm : 100

Del.quantity cm3/: 130.0...150.0 1000 s: (126.0...154.0)

Remarks:

Adjust full-load delivery by turning temperature-dependent excess-fuel stop for starting (TAS).

Note remarks

Test sheet : RVI 14,9 f1 Edition : 07.02.89 Replaces : 10.4.87 Test oil : ISO-4113

: 0 402 048 046 Combination no.

Injection pump

Pump designation : PES8P120A320RS507 : 0 412 028 023 EP type number

Governor

Governor design. : RQV275...1050PA665-2

: 0 421 813 623 Governer no.

Customer-spec. information : RVI Customer

: MIVRO83530 Engine

: 268.0 1st version kW Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter x Wall thickness

: 6.00X1.50X1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values _

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90 : (2.75...2.95)
Rack travel in mm : 9.00...12.00

: 1-8-4-2-6-5 7- 3-Firing order

: 0-45-90-135-180-225-Phasing

270-315

Tolerance + - 0 : 0.50 (0.75)

BASIC SETTING

rpm: 1050 1st speed

Rack travel in mm : 11.00...11.10

Del.quantity cm3/: 18.2...18.4

100 s: (17.9...18.7)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 275.02nd speed Rack travel in mm : 5.2...5.4 Del.quantity cm3/: 1.9...2.5 100 s: (1.6...2.8) cm3 : 0.8

Spread 100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 275

: 0.60...1.00 travel mm 450 2nd speed rpm

3.20...3.60 travel mm

550 3rd speed rpm :

4.10...4.50 travel mm 700

4th speed rpm : 5.00...5.40 rpm : 1050 travel mm

5th speed

: 7.50...7.70 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1130

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050 Aneroid pressure h: 700

: 182.0...184.0 Del.quantity 1000 : (179.0...187.0) : 5.00 cm3 Spread : (9.00) 1000 RATED SPEED 1st version Control lever position degrees: 49...57 Testing: 1st rack travel in: 10.00 Speed rpm : 1105...1115 2nd rack travel in: 4.00 rpm : 1195...1225 Speed 4th rack travel in: 1350 Speed rpm : 0.00...1.00LOW IDLE 1 Control lever position degrees: 16...24 Testina: Speed

rpm : 200 Minimum rack trave: 7.40 : 275 rpm Rack travel in mm : 5.60...5.80

CONSTANT REGULATION rpm : 300...43D Speed

Aneroid/Altitude Compensator Test

1st version Setting Speed : 500 rpm hPa : 700 Pressure

: 11.00...11.10 Rack travel mm

Measurement 1/min: 500 Speed

1st pressure hPa : -Rack travel in m: 9.40...9.60 2nd pressure hPa : 150 Rack travel in m: 10.60...10.70

3rd pressure hPa : 110 Rack travel in m: 9.80...10.00

START CUT-OUT 1/min: 195 (215) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700

Speed rpm : 650 Del.quantity cm3/ : 165.0...171.0 1000 s: (162.0...174.0)

Aneroid pressure h: -

Speed rpm : 500 Del.quantity cm3/ : 116.0...118.0 1000 s: (113.0...121.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: -1.00 rpm : 1105...1115 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 140.0...160.0 1000 s: (136.0...164.0)

LOW IDLE

: 275 Speed rpm Rack travel in mm : -5.20...-5.40 Del.quantity cm3/: 19.0...25.0 1000 s: (16.0...28.0)

cm3 : 8.00 Spread 1000 s: (12.00)

Remarks:

Start-of-delivery mark 13° cam angle after start of delivery cyl. 1.

Note remarks

: IHC 9,4 a 4 : 7.2.89 Test sheet

Edition Replaces

Test oil : ISO-4113

: 0 402 058 043 Combination no.

Injection pump

Pump designation : PES8P100A921/5RS286

Governor

Governor design. : RQV300...1300PA443KR

Customer-spec. information Customer : IHC

Engine : DVT 800

TEST BENCH REQUIREMENTS

Test oil

: 40...45 inlet temp. °C

Overflow valve

: 1 417 413 040

Inlet press., bar: 2.70

Test nozzle holder

: 1 688 901 017 assembly

Opening |

: 207...210 pressure, bar

Orifice plate

diameter mm : 0.6

Test lines : 9 681 230 713

Outside diameter x Wall thickness

: 1/4"x0.083"x40" x Length mm

(A) Injection pump setting values

Insp. Values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Prestroke mm : 2.70...2.80 : (2.65...2.85)

Rack travel in mm: 10.50

: 1-8-4-2-7-3-6-5 Firing order

Phasing : 0-45-90-135-180-225-270-315

: 0.50 (0.75) Tolerance + - 0

Time to cyl. no. : 1

BASIC SETTING

rpm: 1300 1st speed

Rack travel in mm : 12.20...12.30

Del.guantity cm3/: 13.8...14.0

100 s: (-)

Spread cm3 : 0.4

100 s: (-)

rpm : 300 2nd speed Rack travel in mm: 5.00

Del.quantity cm3/: 1.6...2.0 100 s: (-)

Spread cm3 : 0.5100 s: (-)

GUIDE SLEEVE POSITION Control-Lever position

Degree: -1

rpm : 1320

Speed Rack travel in mm : 15.00...17.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1300 Speed Aneroid pressure h: 800

: 138.0...140.0 Del.quantity

1000 : (-) : 4.0 Cm3 Spread 1000 : (-)

RATED SPEED

1st version

Control lever

position degrees: 60.5...65.5

Testing:

1st rack travel in: 11.20 Speed rpm : 1340...1350 2nd rack travel in: 4.00 rpm : 1450...1480 Speed

4th rack travel in: 1640

Speed rom : 0.00...1.00

LOW IDLE 1 Control lever

position degrees: 8.5...13.5 Testing: : 100 Speed rpm Minimum rack trave: 6.20 : 300 Speed rpm Rack travel in mm: 5.00...5.20 Rack travel in mm: 2.00 : 425...485 Speed rpm TORQUE CONTROL Dimension a mm : ? Torque control curve - 1st version 1st speed rpm : 1300 Rack travel in m: 12.15...12.25 2nd speed rpm : 900 Rack travel in m: 11.70...11.80 3rd speed rpm : 700 Rack travel in m: 11.20...11.30 Aneroid/Altitude Compensator Test 1st version Setting : 800 Speed rpm nPa : 160 Pressure : +0.50 Rack travel mm Measurement 1/min: 800 Speed 1st pressure hPa : 620 Rack travel in m: 11.60...11.80 START CUT-OUT 1/min: 170...230 Speed FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 800 Speed rpm : 900 Del.quantity cm3/: 132.0...138.0 1000 s: (-) cm3 : Spread 1000 s: (-) Aneroid pressure h: -

Speed rpm : 800 Del.quantity cm3/ : 89.0...97.0 1000 s: (-) **BREAKAWAY** 1st version

1mm rack travel less than full load rack tr: 11.20 rpm : 1340...1350 Speed STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/ : 188.0...228.0 1000 s: (-) LOW IDLE rpm : 300 Speed Del.quantity cm3/: 16.0...20.0 1000 s: (-)

Remarks: Start-of-delivery mark is at start of delivery of cylinder 1

Note remarks

Test sheet : MB 10,0 n Edition : 07.02.89

Replaces

Test oil : ISO-4113

Combination no. : 0 402 075 700

Injection pump

Pump designation : PES5P110A720LS3221

EP type number : 0 412 015 701

Governor

: RSV350...1100P0A487-Governor design.

Governer no. : 0 421 833 314

Customer-spec. information

Customer : DAIMLER-BENZ

: OM449 Engine

1st version kW : 140.0 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzie holder

: 0 681 343 009 assembly

Opening

: 172...175 pressure, bar

Test lines : 1 680 750 015

Outside diameter

x Wall thickness

: 6.00x1.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 4.30...4.40 Prestroke mm : (4.25...4.45)

Rack travel in mm : 9.00...12.00 Firing order : 1-3-5-4-2

Phasina : 0-72-144-216-288

Tolerance + - 0 : 0.50 (0.75)

Time to cyl. no. : 5

BASIC SETTING

rpm: 1080 1st speed

Rack travel in mm : 10.80...10.90

Del.guantity cm3/: 13.5...13.7

100 s: (13.2...13.9)

cm3 : 0.4Spread

100 s: (0.8)

rpm : 350.0 2nd speed

Rack travel in mm : 6.3...6.7 Del.quantity cm3/ : 1.2...1.8

100 s: (0.9...2.0)

Spread cm3 : 0.4

100 s: (0.7)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800

Rack travel in mm : 0.30...0.70

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed : 1080 rpm

: 135.0...137.0 Del.quantity 1000 : (132.5...139.5)

: 4.00 Spread cm3

1000 : (8.00)

RATED SPEED

1st version

Control Lever

position degrees: 40...48

Testing:

1st rack travel in: 9.80

rpm : 1130...1140 Speed

2nd rack travel in: 4.00

rpm : 1190...1220 Speed 4th rack travel in: 1250 rpm : 0.30...1.40 Speed LOW IDLE 1 Control lever position degrees: 16...24 Setting point w/out bumper spring Speed rpm: 350
Rack travel in mm: 6.5
Speed rpm: 350
Rack travel in mm: 6.30...6.70
Rack travel in mm: 2.00 : 470...530 Speed rpm SET IDLE AUXILIARY SPRING Rack travel in mm : 2.00 FUEL DELIVERY CHARACTERISTICS 1st version : 600 Speed rpm Del.quantity cm3/: 114.0...118.0 1000 s: (111.0...121.0) Spread cm3 : 6.00 1000 s: (9.00) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 9.80 rpm : 1130...1140 Speed STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/ : 140.0...160.0 1000 s: (136.0...164.0) Remarks:

Note remarks

Test sheet : DEE 7,6 L 2 Edition : 8.2.89

Replaces

Test oil : ISO-4113

Combination no. : 0 402 076 028

Injection pump

Pump designation : PES6P110A720RS305

Governor

: RSV400...1050P2/415D Governor design.

Customer-spec. information

Customer : JOHN DEERE

: 6466 A Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 457 413 010

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Openina

pressure, bar : 172...175

Test Lines : 1 680 750 015

Outside diameter

x Wall thickness

: 6.00x1.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Prestroke mm

: 2.75...2.85 : (2.70...2.90)

Rack travel in mm: 11.70

Firing order : 1-5-3-6-2-4

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.5 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1050

Rack travel in mm : 11.70...11.80

Del.guantity cm3/: 16.0...16.2

100 s: (15.8...16.4)

Spread cm3 : 0.4

100 s: (-)

rpm : 400 2nd speed

Rack travel in mm : 6.20...6.40 Del.quantity cm3/: 1.9...2.5

100 s: (-)

cm3 : 0.4Spread

100 s: (-)

GUIDE SLEEVE POSITION Control-lever position

Degree: 800

Speed rpm: -3
Rack travel in mm: 0.40...1.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050 Aneroid pressure h: 800

: 160.0...162.0 Del.quantity 1000 : (158.0...164.0)

: 4.0 cm3 Spread

1000 : (-)

RATED SPEED

1st version

Control lever

position degrees: 40...48

Testing:

1st rack travel in: 10.70 Speed rpm : 1095...1105 2nd rack travel in: 6.00 Speed rpm : 1130...1170

LOW IDLE 1

Control lever

position degrees: 17...25

Setting point w/out bumper spring

Speed rpm : 400 Rack travel in mm : 6.00...6.20

Testina:

Speed rpm : 100 Minimum rack trave: 19.00 Speed rpm : 400

Rack travel in mm : 6.00...6.20

Rack travel in mm: 2.00 : 570...630 Speed rom

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1050

Rack travel in m: 11.70...11.80
2nd speed rpm : 730
Rack travel in m: 11.70...11.80
3rd speed rpm : 650
Rack travel in m: 12.20...12.40

Aneroid/Altitude Compensator Test

1st version

Setting

: 550 Speed rpm hPa : 800 Pressure

Rack travel mm : 11.70...11.80

Measurement

1/min: 550 Speed

1st pressure hPa : 175 *

START CUT-OUT

1/min: 350...450 Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 800 Speed rpm : 650

Del.quantity cm3/: 170.0...174.0 1000 s: (168.0...176.0)

Aneroid pressure h: -

: 550 Speed rpm

Del.quantity cm3/: 88.0...96.0 1000 s: (86.0...98.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 10.70

H02

rpm : 1095...1105 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/: 130.0 1000 s: (-)

HIGH IDLE

1st version

Speed : 1150 rpm

Del.quantity cm3/: 47.0...57.0 1000 s: (-)

LOW IDLE

Speed rpm : 400 Del.quantity cm3/: 19.0...25.0 1000 s: (-)

Remarks:

* Start of LDA (manifold-pressure

compensator) movement

Note remarks

Test sheet : DEE 7,6 y 1 : 20.12.88 Edition Replaces : 30.9.88 : ISO-4113 Test oil

Combination no. : 0 402 076 722

Injection pump

Pump designation : PES6P120A720RS3203

EP type number : 0 412 026 728

Governor

Governor design. : RSV400...1100P2A534

Governer no. : 0 421 833 275

Customer-spec. information Customer : JOHN DEERE

: 6466 HF-050 Engine

: 194.0 1st version kW : 2200 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 457 413 010

Inlet press., bar: 1.50

Test nozzle holder

assembly : 1 688 901 101

Openina

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

: 1 680 750 015 Test lines

Outside diameter x Wall thickness

x Length mm : 6.00x3.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ___

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

: 3.55...3.65 Prestroke mm : (3.50...3.70)

Rack travel in mm : 10.50

Firing order : 1-5-3-6-2-4

: 0-60-120-180-240-300 Phasing

Tolerance + - 0 : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

rpm: 1100 1st speed

Rack travel in mm : 12.00...12.10

Del.quantity cm3/: 15.6...15.8

100 s: (15.4...16.1)

cm3 : 0.4 Spread

100 s: (0.7)

rpm : 400.02nd speed Rack travel in mm : 4.8...5.0 Del.quantity cm3/: 1.7...2.2 100 s: (1.5...2.5)

cm3 : 0.4 100 s: (0.7) Spread

GUIDE SLEEVE POSITION Control-lever position

Dearee: -3 rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

Speed rpm : 1100 Aneroid pressure h: 1200

Del.quantity : 150.5...161.0)

: 4.00 cm3

1000 : (7.50)

RATED SPEED

Spread

1st version Control Lever

position degrees: 40...48

Testing:

H03

1st rack travel in: 11.00 Speed rpm: 1145...1155 2nd rack travel in: 4.00 Speed rpm: 1200...1210 4th rack travel in: 1300

rpm : 0.30...1.40Speed

LOW IDLE 1 Control Lever

position degrees: 16...24 Setting point w/out bumper spring

rpm : 400 Speed Rack travel in mm: 4.4

Testina:

Speed : 100 rpm Minimum rack trave: 19.00 : 400 Speed rpm

Rack travel in mm : 4.80...5.00

Rack travel in mm : 2.00 : 540...600 Speed rom

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1100

Rack travel in m: 12.00...12.10 2nd speed rpm : 750 Rack travel in m: 12.80...13.00

Aneroid/Altitude Compensator Test

1st version Setting

: 500 Speed rpm Pressure hPa : -

: 10.30...10.50 Rack travel mm

Measurement

1/min: 500 Speed

1st pressure hPa : 605 Rack travel in m: 11.00...11.10 2nd pressure hPa : 780 Rack travel in m: 12.10...12.50 3rd pressure hPa : 1200

Rack travel in m: 12.80...13.00

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200 Speed rpm : 750 Del.quantity cm3/ : 174.5...179.5 1000 s: (172.0...182.0)

Aneroid pressure h: -: 800 Speed rpm

Del.quantity cm3/: 117.5...121.5 1000 s: (114.5...124.5)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 11.00

Speed rpm : 1145...1155

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 90.0...110.0 1000 s: (85.0...115.0)

Rack travel in mm : 20.00...21.00

LOW IDLE

rpm : 400 Speed

Rack travel in mm : 4.80...5.00 Del.quantity cm3/: 17.5...22.5 1000 s: (15.0...25.0)

cm3 : 4.50 1000 s: (7.50) Spread

Remarks:

: JOHN DEERE # RE32035

Adjustment without torque-control spring retainer with 0,5 mm less control-rod travel. Increase in full-load delivery with torque-control spring retainer.

Starting/full-load transition speed from holding magnet = 450 1/min.

Start-of-delivery mark 10.5° cam angle after start of delivery cyl. 1

Note remarks

Test sheet : DEE 7,6 y Edition : 20.12.88 : 30.9.88 Replaces Test oil : ISO-4113

Combination no. : 0 402 076 723

Injection pump

Pump designation : PES6P120A720RS3203

EP type number : 0 412 026 728

Governor

Governor design. : RSV400...1100P2A534-

Governer no. : 0 421 833 276

Customer-spec. information Customer : JOHN DEERE

: 6466 AF-050 Engine

: 180.0 1st version kW : 2200 Rated speed

TEST BENCH REQUIREMENTS

Test oil

Overflow valve

Inlet press., bar: 1.50

Test nozzle holder

assembly

Openina .

Orifice plate

: 0,6 diameter mm

Outside diameter x Wall thickness

: 6.00X3.00X600 x Length mm

Insp. values in parentheses Set equal delivery quant.

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

inlet temp. °C : 38...42

: 1 457 413 010

: 1 688 901 101

: 207...210 pressure, bar

: 1 680 750 015 Test lines

(A) Injection pump setting values

per values

H05

: 3.55...3.65 : (3.50...3.70) Prestroke mm

Rack travel in mm: 10.50

: 1-5-3-6-2-4 Firing order

Phasing : 0-60-120-180-240-300

Tolerance + - 0 : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1100

Rack travel in mm : 11.80...11.90

Del.quantity cm3/: 15.0...15.2

100 s: (14.7...15.4)

Spread cm3 : 0.4

100 s: (0.7)

rpm : 400.02nd speed Rack travel in mm : 4.8...5.0 Del.quantity cm3/: 1.7...2.2 100 s: (1.5...2.5)

cm3 : 0.4 100 s: (0.7) Spread

GUIDE SLEEVE POSITION Control-lever position

Degree: -3 rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100 Aneroid pressure h: 1200 Del.quantity : 150.0...152.0 1000 : (147.5...154.5)

: 4.00 cm3 Spread : (7.50) 1000

RATED SPEED

1st version Control lever

position degrees: 40...48

Testina: 1st rack travel in: 10.80 Speed rpm : 1145...1155 2nd rack travel in: 4.00 rpm : 1200...1210 Speed 4th rack travel in: 1350 rom : 0.30...1.40Speed LOW IDLE 1 Control lever position degrees: 16...24 Setting point w/out bumper spring : 400 rpm Rack travel in mm: 4.4 Testina: Speed rpm : 100 Minimum rack trave: 19.00 : 400 rpm Rack travel in mm : 4.80...5.00
Rack travel in mm : 2.00 : 540...600 Speed rpm TORQUE CONTROL Torque control curve – 1st version rpm : 1100 1st speed Rack travel in m: 11.80...11.90 2nd speed rpm : 700 Rack travel in m: 12.60...12.80 Aneroid/Altitude Compensator Test 1st version Settina : 500 Speed rpm Pressure hPa : 1200 Rack travel mm : 12.60...12.80 Measurement 1/min: 500 Speed 1st pressure hPa : -Rack travel in m: 10.40...10.60 2nd pressure hPa : 720 Rack travel in m: 11.00...11.10 3rd pressure hPa : 895 Rack travel in m: 11.80...12.20 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1200

rpm : 700

: 800

1000 s: (171.0...181.0)

Del.quantity cm3/: 173.5...178.5

rpm

Aneroid pressure h: -

Del.quantity cm3/: 120.0...124.0 1000 s: (117.0...127.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 10.80 rpm : 1145...1155 Speed STARTING FUEL DELIVERY : 100 Speed rpm Del.quantity cm3/: 90.0...110.0 1000 s: (85.0...115.0) Rack travel in mm: 20.00...21.00 LOW IDLE rpm : 400 Speed Rack travel in mm : 4.80...5.00 Del.quantity cm3/: 17.5...22.5 1000 s: (15.0...25.0) cm3 : 4.50Spread 1000 s: (7.50) Remarks: : JOHN DEERE # RE32033 Adjustment without torque-control spring retainer with 0,5 mm less control-rod travel. Increase in full-load delivery with torque-control spring retainer. Starting/full-load transition speed from holding magnet = 450 1/min. Start-of-delivery mark 10.5° cam angle after start of delivery cyl. 1

Speed

Speed

Note remarks

: MB 11,7 d 2 Test sheet : 07.02.89 Edition : 7.3.88 Replaces Test oil : ISO-4113

Combination no. : 0 402 076 725

Injection pump

Pump designation : PES6P110A820LS3131-1

: 0 412 016 717 EP type number

Governor

Governor design. : RSV350..1050P0A487-5

: 0 421 833 285 Governer no.

Customer-spec. information

Customer : DAIMLER-BENZ

: OM447 Engine

: 177.0 1st version kW : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 0 681 343 009 assembly

Opening.

pressure, bar : 172...175

: 1 680 750 015 Test lines

Outside diameter

x Wall thickness

: 6.00x1.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.30...4.40

: (4.25...4.45)

Rack travel in mm : 9.00...12.00 : 6-2-4-1-5-3 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm: 1030

Rack travel in mm : 12.50...12.60

Del.quantity cm3/: 15.0...15.2

100 s: (14.7...15.4)

cm3 : 0.4Spread

100 s: (0.8)

2nd speed rpm : 350.0 Rack travel in mm : 7.0...7.3 Del.quantity cm3/: 1.4...2.0

100 s: (1.1...2.3)

Spread cm3 : 0.4100 s: (0.7)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

Speed rpm: 800 Rack travel in mm: 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1030 Speed

Del.quantity : 150.0...152.0 1000 : (147.5...154.5)

: 4.00 cm3 Spread

1000 : (8.00)

RATED SPEED

1st version

Control lever

position degrees: 43...51

Testing:

1st rack travel in: 11.50

H07

```
rpm : 1075...1085
  Speed
2nd rack travel in: 4.00
              rpm : 1130...1160
  Speed
4th rack travel in: 1350
  Speed
              rpm : 0.00...1.40
LOW IDLE 1
Control lever
 position degrees: 20...28
Setting point w/out bumper spring
Speed rpm : 350 Rack travel in mm : 7.1
Testing:
                   : 100
Speed
              rpm
Minimum rack trave: 19.50
Speed rpm : 350
Rack travel in mm : 7.00...7.30
Rack travel in mm : 2.00
                   : 400...440
Speed
              rpm
SET IDLE AUXILIARY SPRING
Rack travel in mm: 2.00
FUEL DELIVERY CHARACTERISTICS
1st version
Speed
                    : 600
              rpm
Del.quantity cm3/: 133.0...137.0
1000 s: (130.0...140.0)
              cm3 : 6.00
Spread
              1000 s: (9.00)
BREAKAWAY
1st version
1mm rack travel less than
 full load rack tr: 11.50
             rpm : 1075...1085
Speed
STARTING FUEL DELIVERY
             rpm : 100
Speed
Del.quantity cm3/: 130.0...150.0
             1000 s: (126.0...154.0)
LOW IDLE
Speed rpm : 350
Rack travel in mm : 7.00...7.30
Del.quantity cm3/ : 14.0...20.0
              1000 s: (11.0...23.0)
Spread
              cm3 : 4.50
             1000 s: (7.00)
Remarks:
```

H08

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks : DEE 7,7 b Test sheet : 20.12.88 : 30.9.88 Edition Replaces : TSO-4113 Test oil Combination no. : 0 402 076 727 Injection pump Pump designation : PES6P120A720RS3203 : 0 412 026 728 EP type number Governor Governor design. : RSV400...1100P2A534-: 0 421 833 290 Governer no. Customer-spec. information Customer : JOHN DEERE Engine : 6076AF : 160.0 1st version kW : 2200 Rated speed TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 457 413 010 Inlet press., bar: 1.50 Test nozzle holder : 1 688 901 101 assembly Opening : 207...210 pressure, bar Orifice plate diameter mm : 0.6 Test lines : 1 680 750 015 Outside diameter x Wall thickness x Length mm : 6.00x3.00x600 (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

: 3.55...3.65 : (3.50...3.70) Prestroke mm Rack travel in mm : 10.50 : 1-5-3-6-2-4 Firing order Phasing : 0-60-120-180-240-300 Tolerance + - 0 : 0.50 (0.75) Time to cyl. no. : 1 BASIC SETTING rpm: 1100 1st speed Rack travel in mm : 11.10...11.20 Del.guantity cm3/: 13.4...13.6 100 s: (13.1...13.8) cm3 : 0.4Spread 100 s: (0.7) rpm : 400.02nd speed Rack travel in mm: 4.8...5.0 Del.quantity cm3/: 1.7...2.2 100 s: (1.5...2.5) cm3 : 0.4Spread 100 s: (0.7) GUIDE SLEEVE POSITION Control-lever position Degree: -3 rpm : 800 Rack travel in mm : 0.30...0.70 FULL LOAD DELIV. AT FULL LOAD STOP 1st version rpm : 1100 Speed Aneroid pressure h: 900 Del.quantity : 154.0...138.5) cm3 : 4.00 Spread : (7.50) 1000 RATED SPEED 1st version Control Lever position degrees: 40...48 Testing: 1st rack travel in: 10.10

rpm : 1145...1155

Speed

H09

per values

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

2nd rack travel in: 4.00

: 1200...1210 Speed rpm

4th rack travel in: 1300

rpm : 0.30...1.40 Speed

LOW IDLE 1 Control Lever

position degrees: 16...24

Setting point w/out bumper spring

: 400 rpm Rack travel in mm: 4.4

Testing:

Speed : 100 rpm Minimum rack trave: 19.00 : 400 Speed rpm

Rack travel in mm : 4.80...5.00

Rack travel in mm : 2.00

Speed : 540...600 rom

TORQUE CONTROL

Torque control curve - 1st version

rpm : 1100 1st speed

Rack travel in m: 11.10...11.20

rpm : 700 2nd speed

Rack travel in m: 12.40...12.60

Aneroid/Altitude Compensator Test

1st version

Settina

Speed : 500 man hPa : Pressure

: 10.50...10.70 Rack travel mm

Measurement

1/min: 500 Speed

1st pressure hPa : 470

Rack travel in m: 11.20...11.30

2nd pressure hPa : 605

Rack travel in m: 11.80...12.20 3rd pressure hPa : 900

Rack travel in m: 12.40...12.60

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900 : 700 Speed

rpm Del.quantity cm3/: 165.5...170.5 1000 s: (163.0...173.0)

Aneroid pressure h: -

Speed rpm : 800

Del.quantity cm3/: 122.0...126.0 1000 s: (121.0...131.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.10

rpm : 1145...1155 Speed

STARTING FUEL DELIVERY

: 100 Speed rom

Del.quantity cm3/: 90.0...110.0

1000 s: (85.0...115.0)

Rack travel in mm : 20.00...21.00

LOW IDLE

: 400 Speed rpm

Rack travel in mm : 4.80...5.00 Del.quantity cm3/ : 17.5...22.5 1000 s: (15.0...25.0)

Spread cm3 : 4.50

1000 s: (7.50)

Remarks:

: JOHN DEERE # RE32034

Adjustment without torque-control spring retainer with 0,5 mm less control-rod travel. Increase in full-load delivery with torque-control spring retainer.

Starting/full-load transition speed from holding magnet = 450 1/min.

Start-of-delivery mark 10.5° cam angle after start of delivery cyl. 1

Note remarks

: DEE 7,7 c : 20.12.88 : 30.9.88 Test sheet Edition Replaces : ISO-4113 Test oil

Combination no. : 0 402 076 728

Injection pump

Pump designation : PES6P120A720RS3203 EP type number : 0 412 026 728

Governor

: RSV425...1050P2A489-Governor design.

: 0 421 833 291 Governer no.

Customer—spec. information

Customer : JOHN DEERE

Engine : 6076 HRW01

1st version kW : 175.0 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 457 413 010

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 101 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

Test Lines : 1 680 750 015

Outside diameter x Wall thickness

x Length mm : 6.00x3.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm

: 3.55...3.65 : (3.50...3.70)

Rack travel in mm : 10.50

: 1-5-3-6-2-4 Firing order

Phasing : 0-60-120-180-240-300

Tolerance + - 0 : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1050

Rack travel in mm : 12.20...12.30

Del.quantity cm3/: 16.0...16.2

100 s: (15.7...16.4)

Spread cm3 : 0.4

100 s: (0.7)

rpm : 425.0 2nd speed

Rack travel in mm : 4.8...5.0 Del.quantity cm3/: 1.7...2.2

100 s: (1.5...2.5) cm3 : 0.4

Spread

100 s: (0.7)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

Speed rpm: 800 Rack travel in mm: 0.30...0.70

Governor spring pre-tension

Click setting x : 4.75

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1050 Speed

Aneroid pressure h: 1200

Del.quantity : 160.0...162.0 1000 : (157.5...164.5)

: 4.00 cm3 Spread

1000 : (7.50)

RATED SPEED

1st version Control lever

position degrees: 40...48

H11

Testina: 1st rack travel in: 11.20 rpm : 1090...1100 Speed 2nd rack travel in: 4.00 rpm : 1160...1170 Speed 4th rack travel in: 1250 rpm : 0.30...1.40Speed LOW IDLE 1 Control lever position degrees: 16...24
Setting point w/out bumper spring rpm : 425 Rack travel in mm : 4.4 Testina: Speed : 100 rpm Minimum rack trave: 19.00 rpm : 425 Rack travel in mm : 4.80...5.00 Rack travel in mm : 2.00 : 570...630 Speed rpm TORQUE CONTROL Torque control curve - 1st version rpm : 1050 1st speed Rack travel in m: 12.20...12.30 rpm : 6002nd speed Rack travel in m: 13.40...13.60 Aneroid/Altitude Compensator Test 1st version Setting rpm : 500 hPa : 1200 mm : 13.40...13.60 Speed rom Pressure Rack travel mm Measurement Speed 1/min: 500 1st pressure hPa : -Rack travel in m: 12.10...12.30 2nd pressure hPa : 725 Rack travel in m: 12.50...12.60 3rd pressure hPa : 815 Rack travel in m: 12.90...13.30 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1200 Speed : 600 rpm

Del.quantity cm3/: 191.0...196.0 1000 s: (188.5...198.5)

: 800

Aneroid pressure h: -

man

Del.quantity cm3/: 157.0...161.0 1000 s: (154.0...164.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 11.20 rpm : 1090...1100 Speed STARTING FUEL DELIVERY rpm : 100 Del.quantity cm3/: 90.0...110.0 1000 s: (85.0...115.0) Rack travel in mm : 20.00...21.00 LOW IDLE Speed rpm : 425
Rack travel in mm : 4.80...5.00
Del.quantity cm3/ : 17.5...22.5
1000 s: (15.0...25.0) cm3 : 4.50Spread 1000 s: (7.50) Remarks: : JOHN DEERE # RE32888 Adjustment without torque-control spring retainer with 0,5 mm less control-rod travel. Increase in full-load delivery with torque-control spring retainer. Starting/full-load transition speed from holding magnet = 450 1/min. Start-of-delivery mark 10.5° cam angle after start of delivery cyl. 1

Speed

Note remarks

: DEE 10,1 g1 Test sheet : 20.12.88 Edition : 30.9.88 Replaces : ISO-4113 Test oil

Combination no. : 0 402 076 731

Injection pump

Pump designation : PES6P110A720RS3217 EP type number : 0 412 016 724

Governor

: RSV400...1050P2A534-Governor design.

: 0 421 833 305 Governer no.

Customer-spec. information

: JOHN DEERE Customer

Engine : 6101 H

1st version kW : 224.0 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 457 413 010

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

: 172...175 pressure, bar

: 1 680 750 015 Test Lines

Cutside diameter

x Wall thickness

x Length mm : 6.00X3.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

: 3.45...3.55 Prestroke mm

: (3.40...3.60)

Rack travel in mm : 10.50

Firing order : 1-5-3-6-2-4

: 0-60-120-180-240-300 Phasing

: 0.50 (0.75) Tolerance + - 0

Time to cyl. no. : 1

BASIC SETTING

rpm: 1050 1st speed

Rack travel in mm : 12.90...13.00

Del.quantity cm3/: 21.2...21.4

100 s: (20.9...21.6)

cm3 : 0.4Spread

100 s: (0.7)

rpm : 400.0 2nd speed Rack travel in mm : 5.2...5.4 Del.quantity cm3/ : 2.0...2.5

100 s: (1.8...2.8)

Spread cm3 : 0.4

100 s: (0.7)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

Speed rpm: 800 Rack travel in mm: 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1050 Speed Aneroid pressure h: 1200

Del.quantity

: 212.0...214.0 1000 : (209.5...216.5)

: 4.00 Spread cm3

1000 : (7.50)

RATED SPEED

1st version Control lever

position degrees: 36...44

Testing:

1st rack travel in: 11.90

rpm : 1090...1100 Speed

H13

2nd rack travel in: 4.00

rpm : 1145...1155 Speed

4th rack travel in: 1300

Speed rpm : 0.30...1.40

LOW IDLE 1 Control lever

position degrees: 14...22 Setting point w/out bumper spring

: 400 rpm Rack travel in mm: 4.8

Testing:

Speed : 100 rom Minimum rack trave: 19.00 rom : 400

Rack travel in mm : 5.20...5.40

Rack travel in mm : 2.00

: 560...620 Speed rom

TORQUE CONTROL

Torque control curve - 1st version 1st speed rpm : 1050 Rack travel in m: 12.90...13.00

: 700 2nd speed rpm

Rack travel in m: 13.70...13.90

Aneroid/Altitude Compensator Test

1st version

Settina

Speed : 500 rpm Pressure hPa : 1200

Rack travel mm : 13.70...13.90

Measurement

 $1/\min : 500$ Speed

1st pressure hPa : -

Rack travel in m: 10.90...11.10 2nd pressure hPa : 325 Rack travel in m: 11.60...11.70

3rd pressure hPa : 640

Rack travel in m: 12.90...13.30

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200

Speed rpm : 700 Del.quantity cm3/ : 228.0...233.0 1000 s: (225.5...235.5)

Aneroid pressure h: -

Speed rpm : 500 Del.quantity cm3/ : 160.0...164.0

1000 s; (157.0...167.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.90 peed rpm : 1090...1100 Speed

STARTING FUEL DELIVERY

: 100 Speed rpm

Del.quantity cm3/: 165.0...185.0

1000 s: (160.0...190.0)

Rack travel in mm : 20.00...21.00

LOW IDLE

Speed

: 400 rpm

Rack travel in mm : 5.20...5.40 Del.quantity cm3/ : 20.5...25.5 1000 s: (18.0...28.0)

cm3 : 4.50 Spread

1000 s: (7.50)

Remarks:

: JOHN DEERE # RE36881

Adjustment without torque-control spring retainer with 0,5 mm less control-rod travel. Increase in full-load delivery with torque-control spring retainer.

Starting/full-load transition speed from holding magnet = 450 1/min.

Start-of-delivery mark 10.5° cam angle after start of delivery cyl. 1

Note remarks

: MB 11,7 d 3 : 07.02.89 Test sheet Edition

Replaces

: ISO-4113 Test oil

Combination no. : 0 402 076 732

Injection pump

Pump designation : PES6P110A820LS3131-1

: 0 412 016 717 EP type number

Governor

Governor design. : RSV350..1100P0A487-6

: 0 421 833 311 Governer no.

Customer-spec. information

Customer : DAIMLER-BENZ

Engine : 0M447

1st version kW : 177.0 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 0 681 343 009 assembly

Opening |

pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter

x Wall thickness

x Length mm : 6.00X1.50X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.30...4.40

: (4.25...4.45)

Rack travel in mm : 9.00...12.00

Firing order : 6-2-4-1-5-3

: 0-60-120-180-240-300 Phasing

Tolerance + - 0 : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm: 1080

Rack travel in mm : 11.70...11.80

Del.guantity cm3/: 14.4...14.6

100 s: (14.1...14.8)

Spread cm3 : 0.4

100 s: (0.8)

2nd speed rpm : 350.0 Rack travel in mm : 7.0...7.3 Del.quantity cm3/ : 1.4...2.0 100 s: (1.1...2.3)

cm3 : 0.4Spread

100 s: (0.7)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3 rpm : 800 Speed

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1080

: 144.0...146.0 Del.quantity 1000 : (141.5...148.5)

Spread cm3 : 4.00

1000 : (8.00)

RATED SPEED

1st version

Control lever

position degrees: 43...51

Testina:

1st rack travel in: 10.70

: 1130...1140 Speed rpm 2nd rack travel in: 4.00 rpm : 1190...1220 Speed 4th rack travel in: 1350 rpm : 0.00...1.40Speed LOW IDLE 1 Control Lever position degrees: 20...28 Setting point w/out bumper spring Speed rpm : 350 Rack travel in mm : 7.1 Testing: : 100 Speed rpm Minimum rack trave: 19.50 Speed rpm : 350
Rack travel in mm : 7.00...7.30
Rack travel in mm : 2.00 : 400...440 Speed rom SET IDLE AUXILIARY SPRING Rack travel in mm : 2.00 FUEL DELIVERY CHARACTERISTICS 1st version : 600 Speed rpm Del.quantity cm3/: 124.0...128.0 1000 s: (121.0...131.0) cm3 : 6.00 Spread 1000 s: (9.00) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 10.70 rpm : 1130...1140 Speed STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/ : 130.0...150.0 1000 s: (126.0...154.0) LOW IDLE Speed rpm : 350
Rack travel in mm : 7.00...7.30 Del.quantity cm3/: 14.0...20.0 1000 s: (11.0...23.0) Spread cm3 : 4.50 1000 s: (7.00) Remarks:

H16

Note remarks

Test sheet : MTU 26,5 b2

Edition : 9.2.89

Replaces

Test oil : ISO-4113

: 0 402 438 028 Combination no.

Injection pump

Pump designation : PE8ZW160/120RS1027

111

: 0 402 468 006 EP type number

Governor

Governor design. : RQUV300...900ZWA67

: 0 422 409 037 Governer no.

Customer-spec. information Customer : MTU

Engine : 8V 331

: 452.0 1st version kW : 1800 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 40...45

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 443 022 assembly

Openina

: 172...175 pressure, bar

: 1 680 750 016 Test Lines

Outside diameter

x Wall thickness

x Length mm : 8.00x2.00x1500

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

: 2.50...2.60 Prestroke mm : (2.45...2.65)

Rack travel in mm : 18.00

Firing order : 8-1-2-6-3-4-5-7

Phasing : 0-45-90-135-180-225-

270-315

Tolerance + - 0 : 0.50 (0.75)

BASIC SETTING

1st speed rpm: 900

Rack travel in mm : 10.00

Del.guantity cm3/: 23.0...24.0

100 s: (22.7...24.3

cm3 : 1.2Spread

100 s: (1.8)

2nd speed rpm : 600
Rack travel in mm : 10.00
Del.quantity cm3/ : 19.0...21.0
100 s: (18.5...21.5)

cm3 : 1.5 100 s: (2.2) Spread

rpm : 300 3rd speed

Rack travel in mm : 9.00 Del.quantity cm3/: 7.2...9.2

100 s: (6.7...9.7)

Spread cm3 : 1.0 100 s: (1.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -1 rpm : 900

Rack travel in mm : 18.00...18.10

RATED SPEED

1st version

Control lever

position degrees: 75...83

Testing:

1st rack travel in: 17.00 Speed rpm : 905...925

2nd rack travel in: 4.00

Speed : 1000...1050 man

4th rack travel in: 1100

: 0.00...2.00 Speed rpm

SET IDLE CONTROL LEVER

POSITION

Speed rpm Rack travel in mm: 8.00

H17

Control lever

position degrees: 18...24

LOW IDLE 1

Control lever

position degrees: 18...24

Testing:

Speed rpm : 200 Minimum rack trave: 10.80 Speed rpm : 400

Rack travel in mm : 3.90...5.00

Rack travel in mm : <0.01

Speed rpm : 485...590

LOW IDLE 2

Control Lever

position degrees: 24...30

Setting point w/out bumper spring

Speed rpm : 375 Rack travel in mm : 8.00

Testing:

Speed rpm: 200

Rack travel in mm : 14.3...17.2

Speed rpm: 300

Rack travel in mm : 10.3...11.8

Speed rpm : 500

Rack travel in mm: 1.9...3.7

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 17.00

Speed rpm : 905...925

Remarks:

Full-load delivery is set on engine according to engine test report.

Note remarks

Test sheet : PER 16,3 a Edition : 07.02.89

Replaces

Test oil : ISO-4113

: 0 402 638 804 Combination no.

Injection pump

Pump designation : PE8P120A120RS7167

EP type number : 0 412 628 834

Governor

Governor design. : RQV300...1050PA908

Governer no. : 0 421 813 734

Customer-spec. information Customer : PERKINS

: CV8 Engine

1st version kW : 485.0 : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 1 688 901 019

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter x Wall thickness

x Length mm : 6.00x1.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.50...4.60 : (4.45...4.65)

Rack travel in mm : 9.00...12.00

: 1- 3- 6- 5- 4- 8-7- 2 Firing order

: 0-45-90-135-180-225-270-315 Phasing

: 0.50 (0.75) Tolerance + - 0

Time to cyl. no.

BASIC SETTING

1st speed rpm: 900

Rack travel in mm : 13.10...13.20

Del.quantity cm3/: 31.0...31.2

100 s: (30.6...31.6)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 300.02nd speed Rack travel in mm : 5.0...5.4 Del.quantity cm3/ : 2.2...2.8 100 s: (1.9...3.1)

cm3 : 0.8 Spread

100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 300 1st speed

travel mm : 1.10...1.50

rpm : 500 2nd speed travel mm

3.40...3.80 : 800 3rd speed rpm

travel mm 5.10...5.50

1060 4th speed rpm

: 7.70...7.90 : 1185 travel mm

5th speed man

: 9.10...9.50 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1 rpm : 1100

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 900 Aneroid pressure h: 1200

Del.quantity : 310.0...316.0)

: 5.00 Spread cm3

1000 : (9.00)

RATED SPEED

1st version Control lever

position degrees: 51...59

Testing:

1st rack travel in: 12.10

rpm : 1055...1065 Speed

2nd rack travel in: 4.00

Speed rpm : 1160...1190 4th rack travel in: 1300

rpm : 0.00...1.00Speed

LOW IDLE 1 Control lever

position degrees: 18...26

Testing:

Speed : 100 rpm Minimum rack trave: 6.70 rpm : 300 Speed

Rack travel in mm : 5.00...5.40

CONSTANT REGULATION

rpm : 300...500 Speed

Aneroid/Altitude Compensator Test

1st version

Setting

rpm : 500 hPa : 1200 Speed rpm Pressure

: 13.10...13.20 Rack travel mm

Measurement

 $1/\min : 500$ Speed

1st pressure hPa :-

Rack travel in m: 11.10...11.30
2nd pressure hPa : 850
Rack travel in m: 12.60...12.70
3rd pressure hPa : 700

Rack travel in m: 11.70...11.90

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200 : 600 Speed rpm

Del.quantity cm3/: 317.0...323.0 1000 s: (314.0...326.0)

Aneroid pressure h: -

Speed rpm : 600 Del.quantity cm3/ : 238.0...242.0 1000 s: (236.0...244.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.10

Speed rpm : 1055...1065

STARTING FUEL DELIVERY

: 100 Speed rpm

Rack travel in mm : 20.00...21.00

Remarks:

Delivery-valve spring pre-tension 3.2...3.4 mm.

Permissible alteration of 3.0...3.5 mm

Because of flattening, set the spring preload on new delivery-valve holders

to 2.9...3.1 mm.

APPLICATION

Navy

Note remarks

: MAN 21,0 a : 10.2.89 Test sheet Edition Replaces : 1.7.88

: ISO-4113 Test oil

: 0 402 640 811 Combination no.

Injection pump

Pump designation : PE12P12OA520LS7812

EP type number : 0 412 620 807

Governor

Governor design. : RQV250...1150PA860-1 Governer no. : 0 421 813 692

Customer-spec. information Customer : MAN

Engine : D2842LYE

: 735.0 1st version kW : 2300 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter x Wall thickness

: 6.00X1.50X1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 4.90...5.00 Prestroke mm

: (4.85...5.05)
Rack travel in mm : 9.00...12.00

: 12-1-5-9-8-Firing order

- 4- 11- 10- 2- 6- 7

: 0-45-60-105-120-165-Phasina 180-225-240-285-300-

Phasing : 345

Tolerance + - 0 : 0.50 (0.75)

Time to cyl. no. : 12

BASIC SETTING

1st speed rpm: 1150

Rack travel in mm : 13.20...13.30

Del.quantity cm3/: 28.9...29.1

100 s: (28.6...29.4)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 250 2nd speed

Rack travel in mm : 7.30...7.50 Del.quantity cm3/: 5.2...6.0 * 100 s: (-)

rpm : 500

3rd speed Rack travel in mm : < 7.50 Del.quantity cm3/: - ** 100 s: (-)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 350 1st speed

travel mm : 2.00...2.40

2nd speed : 900 rpm

travel mm : 6.70...7.10

3rd speed : 1150 rpm

: 8.50...8.60 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1150 Speed Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150 Aneroid pressure h: 1300

: 289.0...291.0 Del.quantity 1000 : (286.0...294.0) : 5.00 Spread cm3 1000 : (9.00) RATED SPEED 1st version Control lever position degrees: 63...71 Testing: 1st rack travel in: 12.20 rpm : 1190...1200 Speed 2nd rack travel in: 4.00 rpm : 1345...1375 Speed 4th rack travel in: 1500 rpm : 0.00...1.00Speed LOW IDLE 1 Control lever position degrees: 8..16 Testing: Speed : 100 rpm Minimum rack trave: 8.90 : 250 Speed rpm Rack travel in mm : 7.30...7.50 Rack travel in mm : 2.00 Speed : 405...465 rpm Aneroid/Altitude Compensator Test 1st version Setting Speed : 500 rpm hPa : 1300 Pressure Rack travel mm : 13.20...13.30 Measurement $1/\min : 500$ Speed 1st pressure hPa : -Rack travel in m: 8.80...9.00 2nd pressure hPa : 270 Rack travel in m: 9.20...9.30 3rd pressure hPa : 790 Rack travel in m: 11.40...11.80 START CUT-OUT 1/min: 170 (190) Speed FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: -

H22

: 500 Speed rpm Del.quantity cm3/: 146.0...148.0 1000 s: (143.0...151.0) Spread cm3 : 8.001000 s: (12.0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 12.20 rpm : 1190...1200 Speed STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/ : 100.0...120.0 * 1000 s: (-) LOW IDLE rpm : 500 Speed Rack travel in mm : <8.00 Del.quantity cm3/: <50.0 1000 s: (-) Remarks: and 12

* applies to cylinders 4, 5, 6, 8, 10 ** applies for cylinders 1, 2, 3, 7, 9 and 11

Note remarks

Test sheet : MAN 21,0 a1 : 07.02.89 Edition

Replaces

Test oil : ISO-4113

: 0 402 640 813 Combination no.

Injection pump

Pump designation : PE12P12OA52OLS7812

: 0 412 620 807 EP type number

Governor

Governor design. : RQV250...1150PA902-1

Governer no. : 0 421 813 728

Customer-spec. information Customer : MAN

: D2842LYE Engine

: 735.0 1st version kW Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 1 688 901 019

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter x Wall thickness

: 6.00x1.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 4.90...5.00 : (4.85...5.05) Prestroke mm

Rack travel in mm : 9.00...12.00

: 12- 1- 5- 9- 8- 3-4- 11- 10- 2- 6- 7 Firing order

: 0-45-60-105-120-165-180-225-240-285-300-Phasing

: 345 Phasing

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 12

BASIC SETTING

1st speed rpm: 1150

Rack travel in mm : 13.20...13.30

Del.quantity cm3/: 28.9...29.1

100 s: (28.6...29.4)

cm3 : 0.5Spread

100 s: (0.9)

2nd speed rpm : 250.0
Rack travel in mm : 7.30...7.50
Del.quantity cm3/ : 5.2...6.0 *
100 s: (-)
3rd speed rpm : 500
Rack travel in mm : 77.50 Rack travel in mm : <7.50 Del.quantity cm3/: - ** 100 s: (-)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed 250 rpm :

1.10...1.50 travel mm

500 2nd speed rpm :

: 3.80...4.20 travel mm

rpm : 850 3rd speed

: 8.50...8.90 travel mm

: 1150 4th speed rpm

: 9.50...9.70 travel mm

rpm : 1400 5th speed

: 13.00...14.00 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1 rpm : 1200 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version Speed rpm : 1150 1st version Aneroid pressure h: 1600 Del.quantity : 289.0...291.0 Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/ : 149.0...151.0 1000 : (286.0...294.0) Spread cm3 : 5.00 1000 s: (146.0...154.0) 1000 : (9.00) Spread cm3 : 8.001000 s: (12.0) RATED SPEED 1st version BREAKAWAY Control Lever position degrees: 57...65 1st version 1mm rack travel less than Testing: 1st rack travel in: 12.20 Speed rpm : 1190...1200 full load rack tr: 12.20 rpm : 1190...1200 Speed 2nd rack travel in: 4.00 rpm : 1275...1315 Speed STARTING FUEL DELIVERY 4th rack travel in: 1400 rpm : 0.00...1.00Speed : 100 Speed man Del.quantity cm3/: 100.0...120.0 * LOW IDLE 1 Control lever 1000 s: (-) position degrees: 18...26 HIGH IDLE Testing: Speed : 100 1st version rpm Minimum rack trave: 8.90 Speed rpm : 500 : 250 Rack travel in mm : <8.00 rpm Rack travel in mm : 7.30...7.50 Rack travel in mm : 2.00 Del.quantity cm3/: <50.0 1000 s: (-) Speed rpm : 430...490 2nd version Aneroid/Altitude Speed rpm : 500 Compensator Test Rack travel in mm: 8.70 Del.quantity cm3/: 130.0 1000 s: (-) 1st version Setting Remarks: Speed mar : 500 : hPa : 1300 Pressure : 13.20...13.30 * applies to cylinders 4, 5, 6, 8, 10 Rack travel mm ** applies for cylinders 1, 2, 3, 7, 9 and 11 Measurement 1/min: 500 Speed **APPLICATION** 1st pressure hPa : -Rack travel in m: 8.90...9.10 2nd pressure hPa : 500 Ship Rack travel in m: 9.30...9.40 3rd pressure hPa : 1150 Rack travel in m: 11.80...12.20 START CUT-OUT Speed 1/min : 170 (190) FUEL DELIVERY CHARACTERISTICS

H24

Note remarks

: MAN 21.0 a2 Test sheet Edition : 07.02.89

Replaces

Test oil : ISO-4113

Combination no. : 0 402 640 814

Injection pump

Pump designation : PE12P120A520LS7812

EP type number : 0 412 620 807

Governor

Governor design. : RQV250...1150PA902

Governer no. : 0 421 813 720

Customer-spec. information Customer : MAN

Engine : D2842LXE

: 662.0 1st version kW : 2300 Rated speed

TEST BENCH REQUIREMENTS

Test cil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter x Wall thickness

x Length mm : 6.00X1.50X1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.90...5.00 : (4.85...5.05)

Rack travel in mm : 9.00...12.00

: 12- 1- 5- 9- 8- 3-4- 11- 10- 2- 6- 7 Firing order

: 0-45-60-105-120-165-Phasing 180-225-240-285-300-

Phasing : 345

Tolerance + - 0 : 0.50 (0.75)

Time to cyl. no. : 12

BASIC SETTING

rpm: 1150 1st speed

Rack travel in mm : 12.20...12.30

Del.quantity cm3/: 24.9...25.1

100 s: (24.6...25.4)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 500.02nd speed

Rack travel in mm : 8.7...8.9

Del.quantity cm3/: 14.1...14.7 100 s: (13.8...15.0)

Spread cm3 : 0.8

100 s: (1.2) rpm : 250 3rd speed

Rack travel in mm : 7.30...7.50 Del.quantity cm3/ : 5.2...6.0 * 100 s: (-)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250

: 1.10...1.50 travel mm

rpm : 500 2nd speed

travel mm : 3.80...4.20

3rd speed : 850 man

travel mm : 8.50...8.90

: 1150 4th speed rom

9.50...9.70 travel mm

5th speed rpm

: 1400 : 13.00...14.00 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1200

Rack travel in mm : 15.20...17.80

FUEL DELIVERY CHARACTERISTICS FULL LOAD DELIV. AT FULL LOAD STOP 1st version 1st version rpm : 1150 Speed Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/ : 149.0...151.0 1000 s: (146.0...154.0) Aneroid pressure h: 1300 Del.quantity : 249.0...254.0) : 5.00 cm3 Spread 1000 : (9.00) BREAKAWAY RATED SPEED 1st version 1st version 1mm rack travel less than Control lever position degrees: 57...65 full load rack tr: 11.20 rpm : 1190...1200 Speed Testing: 1st rack travel in: 11.20 STARTING FUEL DELIVERY rpm : 1190...1200 Speed 2nd rack travel in: 4.00 Speed rpm : 100 Del.quantity cm3/ : 100.0...120.0 * 1000 s: (-) 4th rack travel in: 1450 rpm : 0.00...1.00Speed LOW IDLE 1 Control lever HIGH IDLE position degrees: 18...26 1st version rpm : 500** Speed Testing: : 100 Speed Rack travel in mm : <7.50 rom Minimum rack trave: 8.90 Del.quantity cm3/: <0 1000 s: (-) Speed rpm : 250 Rack travel in mm : 7.30...7.50 Rack travel in mm : 2.00 2nd version : 430...490 rpm : 500** Speed rpm Speed Rack travel in mm : <8.00 Del.quantity cm3/: <50.0 1000 s: (-) Aneroid/Altitude Compensator Test 3rd version 1st version Speed rpm : 500 Rack travel in mm: 8.70 Settina Del.quantity cm3/: 125.0 1000 s: (-) : 500 Speed rpm hPa : 1300 Pressure : 12.20...12.30 Rack travel mm LOW IDLE Measurement Speed rpm : 250
Rack travel in mm : 7.30...7.50
Del.quantity cm3/ : 52.0...60.0 *
1000 s: (-) 1/min: 500 Speed 1st pressure hPa : -Rack travel in m: 8.90...9.10 2nd pressure hPa : 270 Rack travel in m: 9.30...9.40 Remarks: 3rd pressure hPa : 790 Rack travel in m: 11.30...11.70 * applies to cylinders 4, 5, 6, 8, 10 START CUT-OUT ** applies for cylinders 1, 2, 3, 7, 9 1/min : 200 (220) and 11 Speed

APPLICATION Ship

Note remarks

Test sheet : SCA 11,0 v2 : 24.07.87 Edition : 9.3.87 Replaces

Test oil : ISO-4113

Combination no. : 0 402 646 804

Injection pump

Pump designation : PE6P120A720RS7004

: 0 412 626 801 EP type number

Governor

Governor design. : RQ900PA528 : 0 421 801 127 Governer no.

Customer-spec. information

Customer : SAAB - SCANIA

: DS11 43,44,45 Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test Lines : 1 680 750 015

Outside diameter x Wall thickness

: 6.00x1.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.00...5.10 Prestroke mm

: (4.95...5.15)
Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - 0 : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

Firing order

1st speed rpm: 850

Rack travel in mm : 12.80...12.90

Del.quantity cm3/: 20.7...20.9

100 s: (20.4...21.2)

Spread cm3 : 0.6

100 s: (0.9)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 850 Speed

: 207.0...209.0 Del.quantity 1000 : (204.0...212.0)

: 6.00 Spread cm3

1000 : (9.00)

RATED SPEED

1st version

Control lever

position degrees: 22...30

Testing:

1st rack travel in: 11.80 rpm : 900...905 Speed

2nd rack travel in: 4.00

Speed rpm : 941...955 4th rack travel in: 1000

rpm : 0.00...1.00Speed

STARTING FUEL DELIVERY

: 100 Speed rpm

Del.quantity cm3/: 240.0...290.0 1000 s: (-)

Rack travel in mm : 20.00...21.00

HIGH IDLE

1st version

Rack travel in mm : 4.90...5.10

H28

Spread

cm3 : 4.00 1000 s: (7.00)

Remarks:

Delivery-valve spring pre-tension 3.2...3.4 mm. Permissible alteration of 3.0...3.5 mm

ADDITIONAL INFORMATION

Check and set without ROBO diaphragam

For comb. With letter index see VDT-I-400/116.

For sealing see VDT-I-400/117.

Scania test specifications taken over on Oct. 17, 1988

Engine model DS 11 - 17° before top dead center.

Engine model DSI 11 - 16° before top dead center.

Firing sequence of engine: 1-5-3-6-2-4.

Note remarks

: VOL 16,0 a : 10.02.89 Test sheet Edition : 24.7.87 Replaces : ISO-4113 Test oil

: 0 402 646 832 Combination no.

Injection pump

Pump designation : PE6P130A720RS7122 EP type number : 0 412 636 804

Governor

: RQV225...930PA799 Governor design.

: 0 421 813 544 Governer no.

Customer-spec. information Customer : VOLVO

: TD160 Engine

: 343.0 1st version kW : 1860 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 1 688 901 019

Openina

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

: 1 680 750 067 Test lines

Outside diameter x Wall thickness

: 6.00x1.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 3.60...3.70 Prestroke mm

: (3.55...3.75)
Rack travel in mm : 9.00...12.00
Firing order : 1-5-3-6-2-4

: 0-60-120-180-240-300 Phasing

: 0.30 (0.75) Tolerance + - 0

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 700

Rack travel in mm : 12.90...13.00

Del.guantity cm3/: 27.4...27.7

100 s: (27.1...28.1)

cm3 : 0.6Spread

100 s: (1.0)

2nd speed rpm : 250.0 Rack travel in mm : 5.0...5.2 Del.quantity cm3/: 2.5...3.0 100 s: (2.3...3.3)

cm3 : 0.5Spread

100 s: (0.8)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250

: 1.00...1.40 travel mm

: 350 2nd speed rpm

2.10...2.70 travel mm : 700 3rd speed man

travel mm : 6.40...6.60 : 960 4th speed rom

: 7.60...7.80 travel mm

1045 5th speed man

: 9.00...9.40 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1010 Speed

Rack travel in mm : 6.70...9.30

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700 Aneroid pressure h: 700 Del.quantity : 274.5...277.5 1000 : (271.0...281.0)

: 6.00 Spread cm3 1000 : (10.00)

RATED SPEED

1st version Control Lever

position degrees: 57...65

Testing:

1st rack travel in: 11.90 rpm : 960...972 Speed 2nd rack travel in: 4.00 Speed rpm : 1030...1060 4th rack travel in: 1150

rpm : 0.00...1.00Speed

LOW IDLE 1 Control Lever

position degrees: 5...13

Testing:

Speed rpm : 100 Minimum rack trave: 6.50 Speed rpm

Rack travel in mm : 5.00...5.20

CONSTANT REGULATION

rpm : 225...400 Speed

Aneroid/Altitude Compensator Test

1st version Setting

Speed : 500 man hPa : 700 Pressure

: 12.90...13.00 Rack travel mm

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 9.70...9.80

2nd pressure hPa : 80

Rack travel in m: 10.00...10.10

3rd pressure hPa : 540

Rack travel in m: 12.50...12.70

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

rpm : 700 Speed

Del.quantity cm3/: 182.5...185.5 1000 s: (179.0...189.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 11.90 Speed rpm : 960...972

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 125.0...145.0 Rack travel in mm : 9.70...9.80

LOW IDLE

rpm : 250 Speed

Rack travel in mm : 5.00...5.20 Del.quantity cm3/: 25.5...30.5 1000 s: (23.0...33.0)

cm3 : 5.00

1000 s: (8.00)

Remarks:

Spread

Delivery-valve spring pre-tension 3.2...3.4 mm.

Permissible alteration of 3.0...3.5 mm

Because of flattening, set the spring preload on new delivery-valve holders to 2.9...3.1 mm.

Note remarks

Test sheet : SCA 11,1 b : 10.02.89 Edition

Replaces

Test oil : ISO-4113

Combination no. : 0 402 646 836

Injection pump

Pump designation : PE6P120A720RS7126

EP type number : 0 412 626 815

Governor

Governor design. : RQV200...1000PA725-1

: 0 421 813 552 Governer no.

Customer-spec. information

Customer : SAAB-SCANIA

: DSC11 18 Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 015

Outside diameter

x Wall thickness

x Length mm : 6.00X1.50X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.00...5.10 Prestroke mm

: (4.95...5.15)

Rack travel in mm : 9.00...12.00

: 0-60-120-180-240-300 Phasing

: 1-5-3-6-2-4

Tolerance + - 0 : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

Firing order

1st speed rpm : 700

Rack travel in mm : 14.10...14.20

Del.quantity cm3/: 23.4...23.6

100 s: (23.1...23.9)

cm3 : 0.6Spread

100 s: (0.9)

rpm : 225.0 2nd speed

Rack travel in mm: 4.5...4.9 Del.quantity cm3/ : 1.5...1.9

100 s: (-)

cm3 : 0.3 Spread 100 s: (0.6)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 225

: 1.20...1.60 travel mm

2nd speed rpm : 350

travel mm : 2.40...3.00

3rd speed : 650 rpm

: 4.40...5.00 travel mm

: 1045 4th speed rpm

: 8.40...8.60 travel mm

: 1160 5th speed mqn

travel mm : 9.90...10.30

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

rpm : 1040 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 900

Del.quantity : 234.0...239.0)

cm3 : 6.00 Spread 1000 : (9.00)

RATED SPEED

1st version Control lever

position degrees: 59...67

Testina:

1st rack travel in: 13.10 Speed rpm: 1040...1050 2nd rack travel in: 4.00

rpm : 1145...1175 Speed

4th rack travel in: 1300

rpm : 0.00...1.00Speed

LOW IDLE 1

Control lever

position degrees: 7...15

Testina:

Speed : 100 rpm Minimum rack trave: 6.10 Speed : 225 rom

Rack travel in mm : 4.50...4.70

Rack travel in mm : 2.00

: 320...380 Speed man

Aneroid/Altitude Compensator Test

1st version

Setting

Speed : 500 rpm hPa : 900 Pressure

: 14.10...14.20 Rack travel mm

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 10.30...10.70 2nd pressure hPa : 575 Rack travel in m: 13.00...13.10

3rd pressure hPa : 405

Rack travel in m: 11.10...11.30

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900

Speed rpm : 1000 Del.quantity cm3/ : 223.0...231.0 1000 s: (221.0...233.0)

Aneroid pressure h: -

: 500 Speed rpm

Del.quantity cm3/: 150.0...154.0 1000 s: (148.0...156.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 13.10 peed rpm : 1040...1050 Speed

STARTING FUEL DELIVERY

rpm

Del.quantity cm3/: 275.0...325.0 1000 s: (-)

Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 225 Rack travel in mm : 4.50...4.70

Remarks:

Delivery-valve spring pre-tension

3.2...3.4 mm.

Permissible alteration of 3.0...3.5 mm

Because of flattening, set the spring preload on new delivery-valve holders to 2.9...3.1 mm.

ADDITIONAL INFORMATION

Start-of-delivery setting with ROBO

diaphragm.

For comb. with letter index see

VDT-I-400/116.

For sealing see VDT-I-400/117.

Test specifications approved by Scania

on 1988-09-21

Start of delivery - engine: 13° before

Firing sequence of engine: 1-5-3-6-2-4.

Note remarks

: VOL 16,0 b : 10.02.89 Test sheet Edition : 3.4.87 Replaces : ISO-4113 Test oil

Combination no. : 0 402 646 837

Injection pump

Pump designation : PE6P130A720RS7134 EP type number : 0 412 636 805

Governor

Governor design. : RQV225...930PA849 Governor no. : 0 421 813 600

Customer-spec, information Customer : VOLVO

Engine : TD160

1st version kW : 320.0 : 1860 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

: 1 680 750 067 Test lines

Outside diameter x Wall thickness

x Length mm : 6.00x1.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.60...3.70

: (3.55...3.75)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

: 0-60-120-180-240-300 Phasing

Tolerance + - 0 : 0.30 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 700

Rack travel in mm : 12.90...13.00

Del.quantity cm3/: 27.5...27.7

100 s: (27.1...28.1)

Spread cm3 : 0.6

100 s: (1.0)

rpm : 225.0 2nd speed

Rack travel in mm : 5.1...5.3 Del.quantity cm3/ : 2.5...2.9 100 s: (2.2...3.2)

cm3 : 0.4

100 s: (0.8)

(B) Setting of injection pump

with governor

Spread

GUIDE SLEEVE TRAVEL

1st speed rpm : 225 : 0.90...1.00 travel mm 2nd speed : 440 rom

: 3.60...3.90 travel mm

rpm : 750 3rd speed : 6.40...6.60 travel mm

4th speed : 980 rpm

travel mm : 7.90...8.10

5th speed : 1050 rpm

: 9.20...9.40 travel mm

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1 rpm : 1010 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 700 Speed Aneroid pressure h: 700 Del.quantity : 275.0...277.0 1000 : (271.0...281.0)

cm3 : 6.00 1000 : (10.00) Spread

RATED SPEED

1st version Control Lever

position degrees: 58...66

Testing:

1st rack travel in: 11.90 rpm : 975...985 Speed 2nd rack travel in: 4.00

Speed rpm : 1040...1070 4th rack travel in: 1200 Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever

position degrees: 5...13

Testing:

Speed : 100 rom Minimum rack trave: 6.60 rpm : 225

Rack travel in mm : 5.10...5.30

CONSTANT REGULATION

: 225...390 Speed

Aneroid/Altitude Compensator Test

1st version Setting

: 500 Speed rom hPa : 700 Pressure

: 12.90...13.00 Rack travel mm

Measurement

1/min: 500 Speed

1st pressure hPa : Rack travel in m: 9.70...9.80
2nd pressure hPa : 550
Rack travel in m: 12.70...12.80
3rd pressure hPa : 100

Rack travel in m: 10.00...10.30

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

Speed rpm: 700 Del.quantity cm3/: 182.0...186.0 1000 s: (179.0...189.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 11.90 rpm : 975...985 Speed

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 125.0...145.0 1000 s: (-)

Rack travel in mm : 9.70...9.80

LOW IDLE

Speed rpm : 225
Rack travel in mm : 5.10...5.30
Del.quantity cm3/: 25.0...29.0

1000 s: (22.0...32.0)

cm3 : 4.00 Spread

1000 s: (8.00)

Remarks:

Delivery-valve spring pre-tension 3.2...3.4 mm.

Permissible alteration of 3.0...3.5 mm

Because of flattening, set the spring preload on new delivery-valve holders to 2.9...3.1 mm.

Note remarks

Test sheet : SCA 11.1 d
Edition : 10.02.89
Replaces : 2.11.87
Test oil : ISO-4113

Combination no. : 0 402 646 844

Injection pump

Pump designation : PE6P120A720RS7017 EP type number : 0 412 626 818

Governor

Governor design. : RQV200...1000PA539-7

Governer no. : 0 421 813 631

Customer-spec. information

Customer : SAAB-SCANIA

Engine : DSC 11 12

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 1 688 901 019

Opening |

pressure, bar : 207...210

Orifice plate

diameter mm : 0.8

Test Lines : 1 680 750 015

Outside diameter

x Wall thickness

x Length mm : 6.00x1.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.00...5.10 : (4.95...5.15)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance $+ - \circ$: 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 700

Rack travel in mm : 14.50...14.60

Del.quantity cm3/: 22.0...22.2

100 s: (21.7...22.5)

Spread cm3 : 0.6

100 s: (0.9)

2nd speed rpm : 225.0 Rack travel in mm : 5.3...5.7

Del.quantity cm3/: 1.8...2.2

100 s: (-)

Spread cm3 : 0.3 100 s: (0.6)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 225

travel mm : 1.20...1.60

2nd speed rpm : 350

travel mm : 2.40...3.00

3rd speed rpm : 650

travel mm : 4.50...5.10

4th speed rpm : 1045

travel mm : 8.40...8.60

5th speed rpm : 1165

travel mm : 10.00...10.40

GUIDE SLEEVE POSITION
Control-lever position

Control-lever position
Degree: -1

peed rpm : 1050

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700 Aneroid pressure h: 900

Del.quantity : 220.0...222.0

1000 : (217.0...225.0)

108

cm3 : 6.00Spread

1000 : (9.00)

RATED SPEED

1st version Control Lever

position degrees: 59...67

Testing:

1st rack travel in: 13.50

rpm : 1040...1050 Speed

2nd rack travel in: 4.00 Speed rpm : 1150...1180 4th rack travel in: 1300

rpm : 0.00...1.00 Speed

LOW IDLE 1 Control lever

position degrees: 7...15

Testing:

rpm : 100 Speed Minimum rack trave: 6.90

rpm : 225 Speed

Rack travel in mm: 5.30...5.50 Rack travel in mm: 2.00 Speed rpm: 380...440

Aneroid/Altitude Compensator Test

1st version

Setting

Speed : 500 rpm hPa : 900 Pressure

Rack travel mm : 14.50...14.60

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 12.30...12.70

2nd pressure hPa : 480

Rack travel in m: 14.10...14.20

3rd pressure hPa : 285

Rack travel in m: 13.00...13.20

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900

Speed rpm : 1000 Del.quantity cm3/: 210.0...218.0

1000 s: (208.0...220.0)

Aneroid pressure h: -

Speed והמח : 500 Del.quantity cm3/: 169.0...173.0 1000 s: (167.0...175.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.50

rpm : 1040...1050 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 240.0...290.0

1000 s: (-)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 225 Rack travel in mm : 5.30...5.50

Delivery-valve spring pre-tension 3.2...3.4 mm.

Permissible alteration of 3.0...3.5 mm

Because of flattening, set the spring preload on new delivery-valve holders to 2.9...3.1 mm.

Start-of-delivery setting with ROBO diaphragm.

ADDITIONAL INFORMATION

For comb. with letter index see VDT-I-400/116.

For sealing see VDT-I-400/117.

Test specifications approved by Scania on 1988-09-21

Start of delivery - engine: 16° before

Firing sequence of engine: 1-5-3-6-2-4.

Note remarks

Test sheet : SCA 11,1 c Edition : 10.02.89 : 5.2.88 Replaces

Test oil : ISO-4113

Combination no. : 0 402 646 845

Injection pump

Pump designation : PE6P120A720RS7139

EP type number : 0 412 626 819

Governor

Governor design. : RQV200...1000PA725-2

: 0 421 813 632 Governer no.

Customer-spec. information

Customer : SAAB-SCANIA

: DSC11 13 Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Openina |

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 015

Outside diameter x Wall thickness

: 6.00X1.50X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.00...5.10 Prestroke mm : (4.95...5.15)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - 0 : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 700

Rack travel in mm : 15.20...15.30

Del.quantity cm3/: 23.6...23.8

100 s: (23.3...24.1)

Spread cm3 : 0.6

100 s: (0.9)

rpm : 225.0 2nd speed

Rack travel in mm : 5.3...5.7 Del.quantity cm3/ : 1.8...2.2 100 s: (-)

Spread cm3 : 0.3100 s: (0.6)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

1st speed

rpm : 225 : 1.20...1.60 travel mm

2nd speed

rpm : 350 : 2.40...3.00 travel mm

rpm : 650 3rd speed

: 4.40...5.00 travel mm

rpm : 1045 4th speed

: 8.40...8.60 travel mm

rpm : 1170 5th speed

: 10.10...10.50 travel mm

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

rpm : 1050

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 900

Del.quantity : 230.0...241.0)

cm3 : 6.00 1000 : (9.00) Spread cm3

RATED SPEED

1st version Control lever

position degrees: 59...67

Testing:

1st rack travel in: 14.20 rpm : 1040...1050 Speed

2nd rack travel in: 4.00

Speed rpm : 1155...1185 4th rack travel in: 1300

rpm : 0.00...1.00 Speed

LOW IDLE 1 Control lever

position degrees: 7...15

Testing:

: 100 Speed rpm Minimum rack trave: 6.90 rpm : 225 Speed

Rack travel in mm : 5.30...5.50 Rack travel in mm : 2.00 Speed rpm : 380...440

Aneroid/Altitude Compensator Test

1st version Setting

Speed : 500 rpm hPa : 900 Pressure

Rack travel mm : 15.20...15.30

Measurement

1/min: 500 Speed

1st pressure hPa : Rack travel in m: 12.30...12.70
2nd pressure hPa : 535
Rack travel in m: 14.60...14.70
3rd pressure hPa : 290

Rack travel in m: 13.10...13.30

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900 : 1000 Speed rpm

Del.quantity cm3/: 226.0...234.0 1000 s: (224.0...236.0)

Aneroid pressure h: -

: 500 Speed rpm

Del.quantity cm3/: 169.0...173.0 1000 s: (167.0...175.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 14.20

rpm : 1040...1050 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 240.0...290.0 1000 s: (-)

Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 225 Rack travel in mm : 5.30...5.50

Remarks:

Delivery-valve spring pre-tension 3.2...3.4 mm.

Permissible alteration of 3.0...3.5 mm

Because of flattening, set the spring preload on new delivery-valve holders to 2.9...3.1 mm.

Start-of-delivery setting with ROBO

diaphragm.

ADDITIONAL INFORMATION

For comb. with letter index see

VDT-1-400/116.

For sealing see VDT-I-400/117.

Test specifications approved by Scania

on 1988-09-21

Start of delivery - engine: 15° before

Firing sequence of engine: 1-5-3-6-2-4.

Note remarks

: SCA 11,1 e : 10.02.89 Test sheet Edition

Replaces

Test oil : ISO-4113

Combination no. : 0 402 646 846

Injection pump

Pump designation : PE6P120A720RS7018

EP type number : 0 412 626 821

Governor

Governor design. : RQV200...1000PA539-8

: 0 421 813 635 Governer no.

Customer-spec. information

Customer : SAAB-SCANIA

: DS11 73 Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 015

Outside diameter

x Wall thickness

: 6.00X1.50X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.00...5.10 Prestroke mm

: (4.95...5.15)
Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 700

Rack travel in mm : 13.20...13.30

Del.guantity cm3/: 19.2...19.4

100 s: (18.9...19.7)

cm3 : 0.6Spread

100 s: (0.9)

rpm : 225.0 2nd speed Rack travel in mm: 4.7...5.1

Del.quantity cm3/ : 1.4...1.8

100 s: (-) cm3 : 0.3

Spread 100 s: (0.6)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 225

travel mm : 1.20...1.60

rpm : 350 2nd speed

travel mm : 2.40...3.00

3rd speed rpm : 650

: 4.50...5.10 travel mm rpm : 1045

4th speed travel mm

: 8.40...8.60

: 1150 5th speed rpm

: 9.80...10.20 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1050 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 900

Del.quantity : 192.0...197.0)

: 6.00 Spread cm3 1000 : (9.00)

RATED SPEED

1st version Control Lever

position degrees: 58...66

Testing:

1st rack travel in: 12.20 Speed rpm : 1040...1050 2nd rack travel in: 4.00

rpm : 1135...1165 Speed

4th rack travel in: 1250

Speed rpm : 0.00...1.00

LOW TDIE 1 Control Lever

position degrees: 6...14

Testina:

Speed rpm : 100 Minimum rack trave: 6.30 rpm

Rack travel in mm : 4.70...4.90 Rack travel in mm : 2.00

: 350...410 Speed man

Aneroid/Altitude Compensator Test

1st version Setting

: 500 Speed mar hPa : 900 Pressure

Rack travel mm : 13.20...13.30

Measurement

1/min : 500Speed

1st pressure hPa : -

Rack travel in m: 11.20...11.60

2nd pressure hPa : 405

Rack travel in m: 12.80...12.90 3rd pressure hPa : 255

Rack travel in m: 11.80...12.00

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900 : 1000 Speed rpm

Del.quantity cm3/: 187.0...195.0 1000 s: (185.0...197.0)

Aneroid pressure h: -

: 500 Speed rpm

Del.quantity cm3/: 143.0...147.0 1000 s: (141.0...149.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.20

rpm : 1040...1050 Speed

STARTING FUEL DELIVERY

rpm : 100

Del.quantity cm3/: 280.0...330.0 1000 s: (-)

Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 225
Rack travel in mm : 4.70...4.90

Remarks:

Delivery-valve spring pre-tension

3.2...3.4 mm.

Permissible alteration of 3.0...3.5 mm

Because of flattening, set the spring preload on new delivery-valve holders to 2.9...3.1 mm.

Start-of-delivery setting with ROBO diaphragm.

ADDITIONAL INFORMATION

For comb. with letter index see VDT-I-400/116.

For sealing see VDT-I-400/117.

Test specifications approved by Scania on 1988-09-12

Start of delivery - engine: 14° before

Firing sequence of engine: 1-5-3-6-2-4.

Note remarks

Test sheet : SCA 9,0 L Edition : 10.02.89

Replaces

Test oil : ISO-4113

Combination no. : D 402 646 847

Injection pump

Pump designation : PE6P120A320RS7138

EP type number : 0 412 626 822

Governor

Governor design. : RQV200...1100PA712-2

: 0 421 813 636 Governer no.

Customer-spec. information

Customer : SAAB-SCANIA

: DSC9 02 Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 015

Outside diameter

x Wall thickness

x Length mm : 6.00X1.50X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 4.40...4.50 Prestroke mm : (4.35...4.55) Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

: 0-60-120-180-240-300 Phasing

Tolerance + - 0 : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 700

Rack travel in mm : 12.90...13.00

Del.quantity cm3/: 18.4...18.6

100 s: (18.1...18.9)

cm3 : 0.6Spread

100 s: (0.9)

rpm : 225.0 2nd speed

Rack travel in mm : 4.9...5.3 Del.quantity cm3/: 2.1...2.5

100 s: (-)

cm3 : 0.3Spread

100 s: (0.6)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

rpm : 225 1st speed

: 0.90...1.30 travel mm

2nd speed rpm :

: 350 : 2.50...3.10 travel mm

3rd speed rpm : 650

: 5.40...6.00 travel mm

4th speed : 1145 rpm

: 8.90...9.10 travel mm rpm : 1290 5th speed

: 10.20...10.60 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1 rpm : 1120

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 700 Speed Aneroid pressure h: 900

Anerola Del.quantity 1000 : 184.0...186.0

: (181.0...189.0)

: 6.00 Spread cm3 1000 : (9.00)

RATED SPEED

1st version Control lever

position degrees: 60...68

Testina:

1st rack travel in: 11.90

rpm : 1140...1150 Speed

2nd rack travel in: 4.00

Speed rpm : 1275...1305 4th rack travel in: 1400 Speed rpm : 0.00...1.00

LOW IDLE 1 Control lever

position degrees: 6...14

Testing:

Speed : 100 rpm Minimum rack trave: 6.50

Speed rpm: 225
Rack travel in mm: 4.90...5.10
Rack travel in mm: 2.00

: 300...360 Speed rpm

Aneroid/Altitude Compensator Test

1st version

Settina

pm : 500 hPa : 900 Speed rpm Pressure

Rack travel mm : 12.90...13.00

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 10.90...11.30
2nd pressure hPa : 345
Rack travel in m: 12.40...12.50
3rd pressure hPa : 175
Rack travel in m: 11.30...11.50

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900

Speed rpm : 1100 Del.quantity cm3/ : 179.0...187.0 1000 s: (177.0...189.0)

Aneroid pressure h: -

: 500 Speed nan

Del.quantity cm3/: 132.0...136.0

1000 s: (130.0...138.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.90

rpm : 1140...1150 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 270.0...320.0 1000 s: (-)

Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 225 Rack travel in mm : 4.90...5.10

Remarks:

Delivery-valve spring pre-tension 3.2...3.4 mm.

Permissible alteration of 3.0...3.5 mm

Because of flattening, set the spring preload on new delivery-valve holders to 2.9...3.1 mm.

Start-of-delivery setting with ROBO diaphragm.

ADDITIONAL INFORMATION

For comb. with letter index see VDT-I-400/116.

For sealing see VDT-I-400/117.

Test specifications approved by Scania on 1988-09-12

Start of delivery - engine: 15° before

Firing sequence of engine: 1-5-3-6-2-4.

Note remarks

: SCA 9,0 L 1 Test sheet : 10.02.89 Edition

Replaces

Test oil : ISO-4113

: 0 402 646 848 Combination no.

Injection pump

Pump designation : PE6P12OA32ORS7138

: 0 412 626 822 EP type number

Governor

Governor design. : RQV200...1100PA712-3 Governer no. : 0 421 813 637

Customer-spec. information

Customer : SAAB-SCANIA

Engine : DS9 05

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Opening 1

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 015

Outside diameter

x Wall thickness

: 6.00x1.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 4.40...4.50 Prestroke mm

: (4.35...5.55)
Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - 0 : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

rpm: 700 1st speed

Rack travel in mm : 12.20...12.30

Del.guantity cm3/: 16.5...16.7

100 s: (16.2...17.0)

cm3 : 0.6Spread

100 s: (0.9)

rpm : 225.0 2nd speed

Rack travel in mm : 4.9...5.3 Del.quantity cm3/: 2.1...2.5

100 s: (-)

cm3 : 0.3 Spread

100 s: (0.6)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

rpm : 225 1st speed

: 0.90...1.30 travel mm

2nd speed rpm : 350

: 2.50...3.10 travel mm

rpn: : 650 3rd speed

: 5.40...6.00 travel mm

rpm : 1145 4th speed

: 8.90...9.10 travel mm

: 1280 5th speed man : 10.10...10.50 travel mm

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1 rpm : 1120

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

Speed rpm : 700

Aneroid pressure h: 900

Del.quantity : 100.0...170.0)

Spread cm3 : 6.00

: (9.00) 1000

RATED SPEED

1st version Control lever

position degrees: 59...67

Testing:

1st rack travel in: 11.20 Speed rpm : 1140...1150 2nd rack travel in: 4.00

Speed rpm : 1265...1295 4th rack travel in: 1400

Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever

position degrees: 6...14

Testing:

Speed : 100 rpm Minimum rack trave: 6.50 : 225 Speed rpm

Rack travel in mm : 4.90...5.10

Rack travel in mm : 2.00

: 300...360 Speed rom

Aneroid/Altitude Compensator Test

1st version

Settina

: 500 Speed rom hPa : 900 Pressure

: 12.20...12.30 Rack travel mm

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 10.60...11.00

2nd pressure hPa : 360

Rack travel in m: 11.80...11.90

3rd pressure hPa : 240

Rack travel in m: 11.00...11.20

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900 rpm : 1100 Speed

Del.quantity cm3/: 163.0...171.0 1000 s: (161.0...173.0)

Aneroid pressure h: -

: 500 Speed rpm

Del.quantity cm3/: 125.0...129.0 1000 s: (123.0...131.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.20

rpm : 1140...1150 Speed

STARTING FUEL DELIVERY

: 100 rpm

Del.quantity cm3/: 270.0...320.0

1000 s: (-)

Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 225 Rack travel in mm : 4.90...5.10

Remarks:

Delivery-valve spring pre-tension

3.2...3.4 mm.

Permissible alteration of 3.0...3.5 mm

Because of flattening, set the spring preload on new delivery-valve holders to 2.9...3.1 mm.

Start-of-delivery setting with ROBO

diaphragm.

ADDITIONAL INFORMATION

For comb. with letter index see

VDT-I-400/116.

For sealing see VDT-I-400/117.

Test specifications approved by Scania

on 1988-09-12

Start of delivery - engine: 13° before

TDC

Firing sequence of engine: 1-5-3-6-2-4.

Note remarks

: VOL 16,2 a : 10.02.89 : 2.6.87 Test sheet Edition Replaces : ISO-4113 Test oil

: D 402 646 849 Combination no.

Injection pump

Pump designation : PE6P130A720RS7137 EP type number : 0 412 636 806

Governor

: RQ750PA865 Governor design. : 0 421 801 401 Governer no.

Customer-spec. information Customer : VOLVO

Engine : TID162 AG

1st version kW : 350.0 : 1500 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Openina (

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter

x Wall thickness

: 6.00x1.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY Test pressure, bar: 25...27 Prestroke mm

: 3.60...3.70

: (3.55...3.75)
Rack travel in mm : 9.00...12.00

Firing order

: 1-5-3-6-2-4

Phasing

: 0-60-120-180-240-300

Tolerance + - 0

: 0.30 (0.75)

Time to cyl. no. : 1

BASIC SETTING

rpm: 700 1st speed

Rack travel in mm : 11.40...11.50

Del.quantity cm3/: 34.1...34.3

100 s: (33.8...34.6)

Spread

cm3 : 0.5

100 s: (0.9)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

rpm : 700

: 341.0...343.0 Del.quantity 1000 : (338.0...346.0)

: 5.00 cm31000 : (9.00)

RATED SPEED

1st version

Testing:

Spread

1st rack travel in: 10.40

rpm : 750...755 Speed

2nd rack travel in: 4.00

Speed : 777...790 rpm

4th rack travel in: 840

Speed : 0.00...1.00 rom

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.40

rpm : 750...755 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 270.0...310.0 1000 s: (260.0...320.0)

HIGH IDLE

1st version

rpm : 781 cm3 : 5.00 1000 s: (7.00) Speed Spread

Remarks:

APPLICATION

Generator

: 3.60...3.70 BOSCH INJ. PLMP TEST SPECIFICATIONS Prestroke mm : (3.55...3.75) Rack travel in mm : 9.00...12.00 Note remarks : 1-5-3-6-2-4 Firing order : PEN 16,2 a : 10.02.89 : 20.11.87 Test sheet Edition Replaces Test oil : ISO-4113 : 0-60-120-180-240-300 Phasing : 0 402 646 850 Combination no. Tolerance + - 0 : 0.30 (0.75) Injection pump Time to cyl. no. : 1 Pump designation : PE6P130A720RS7140 EP type number : 0 412 636 807 BASIC SETTING Governor : RQV250...900PA869 rpm: 700 Governor design. 1st speed : 0 421 813 634 Governer no. Rack travel in mm : 10.20...10.30 Customer-spec. information Customer : VOLVO-PENTA Del.quantity cm3/: 29.2...29.4 Engine : TID 162 AP 100 s: (28.8...29.8) : 357.0 1st version kW Spread cm3 : 0.5: 1800 Rated speed 100 s: (0.9) TEST BENCH REQUIREMENTS 2nd speed rpm : 250.0 Rack travel in mm : 3.7...3.9 Del.quantity cm3/ : 1.7...2.2 Test oil inlet temp. °C : 38...42 100 s: (1.4...2.4) Overflow valve Spread cm3 : 0.5: 1 417 413 025 100 s: (0.7) Inlet press., bar: 1.50 (B) Setting of injection pump with governor Test nozzle holder : 1 688 901 019 assembly GUIDE SLEEVE TRAVEL 250 1st speed rpm : 0.90...1.30 Openina (travel mm : 207...210 pressure, bar 2nd speed rpm : travel mm Orifice plate 3rd speed diameter mm : 0,8 travel mm 4th speed man travel mm Test Lines : 1 680 750 067 5th speed rpm travel mm Outside diameter x Wall thickness GUIDE SLEEVE POSITION x Length mm : 6.00X1.50X1000

350 2.00...2.60 rpm : 700 : 4.40...5.00 : 925 : 7.30...7.50 : 985 : 8.10...8.50 Control-lever position Degree: -1 rpm : 980 Speed Rack travel in mm : 15.20...17.80 FULL LOAD DELIV. AT FULL LOAD STOP 1st version Speed rpm : 700

(A) Injection pump setting values

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Insp. values in parentheses Set equal delivery quant.

Del.quantity : 292.0...298.0) cm3 : 5.00 1000 : (9.00) Spread RATED SPEED 1st version Control Lever position degrees: 55...63 Testina: 1st rack travel in: 9.20 rpm : 920...925 Speed 2nd rack travel in: 4.00 Speed rpm : 970...1000 4th rack travel in: 1100 Speed rpm : 0.00...1.00LOW IDLE 1 Control lever position degrees: 6...14 Testing: Speed rom : 100 Minimum rack trave: 5.30 Speed rpm : 250 Rack travel in mm : 3.70...3.90 CONSTANT REGULATION rpm : 250...360 Speed **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 9.20 rpm : 920...925 STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/ : 220.0...260.0 1000 s: (-) LOW IDLE Remarks:

Delivery-valve spring pre-tension

J21

3.2...3.4 mm. Permissible alteration of 3.0...3.5 mm

Because of flattening, set the spring preload on new delivery-valve holders to 2.9...3.1 mm.

Note remarks

Test sheet : SCA 11,1 f : 10.02.89 Edition

Replaces

Test oil : ISO-4113

: 0 402 646 854 Combination no.

Injection pump

Pump designation : PE6P120A720RS7019

EP type number : 0 412 626 823

Governor

Governor design: RQ200/1000PA713-2

Governer no. : 0 421 801 408

Customer-spec. information

Customer : SAAB-SCANIA

Engine : DS11 71

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Openina

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test Lines : 1 680 750 015

Outside diameter

x Wall thickness

x Length mm : 6.00x1.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.00...5.10 Prestroke mm

: (4.95...5.15)

Rack travel in mm : 9.00...12.00

Firing order

: 1-5-3-6-2-4

Phasina

: 0-60-120-180-240-300

Tolerance + - °

: 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed

rpm: 700

Rack travel in mm : 11.40...11.50

Del.quantity cm3/: 16.1...16.3

100 s: (15.8...16.6)

Spread

cm3 : 0.6

100 s: (0.9)

rpm : 225.0 2nd speed

Rack travel in mm : 4.7...5.1 Del.quantity cm3/: 1.6...2.0

100 s: (-) cm3 : 0.3

Spread 100 s: (0.6)

GUIDE SLEEVE POSITION Control-lever position

Dearee: -2

rpm : 600

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 700 Speed

Aneroid pressure h: 900

: 161.0...163.0 Del.quantity 1000 : (158.0...166.0)

: 6.00 Spread cm3

1000 : (9.00)

RATED SPEED

1st version

Setting point:

: 600

Speed rpm : 600 Rack travel in mm : 16.5

Testing:

1st rack travel in: 10.40

rpm : 1045...1060 Speed

2nd rack travel in: 4.00

rpm : 1170...1200 Speed

4th rack travel in: 1300

rpm : 0.00...1.00 Speed

LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 225 Rack travel in mm : 4.8

Testing:

Speed rpm : 100 Minimum rack trave: 6.30 rpm : 225

Rack travel in mm : 4.70...4.90

Rack travel in mm : 2.00 : 310...350 Speed rom

Aneroid/Altitude Compensator Test

1st version

Setting

Speed rpm : 500 hPa : 900 Pressure

: 11.40...11.50 Rack travel mm

Measurement

1/min: 500 Speed

1st pressure hPa : Rack travel in m: 9.30...9.70

2nd pressure hPa : 320

Rack travel in m: 10.80...10.90

3rd pressure hPa : 180

Rack travel in m: 9.90...10.10

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900 rpm : 1000 Speed

Del.quantity cm3/: 174.0...182.0 1000 s: (172.0...184.0)

Aneroid pressure h: -

Speed rpm : 500 Del.quantity cm3/: 112.0...116.0 1000 s: (110.0...118.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 10.40

rpm : 1045...1060 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 275.0...325.0

1000 s: (-)

Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 225
Rack travel in mm : 4.70...4.90

Remarks:

Delivery-valve spring pre-tension

3.2...3.4 mm.

Permissible alteration of 3.0...3.5 mm

See VDT-I-460/138.

Start-of-delivery setting with ROBO

diaphragm.

ADDITIONAL INFORMATION

For comb. with letter index see

VDT-I-400/116.

For sealing see VDT-I-400/117.

Scania test specifications taken over

on Sep. 5, 1988

Start of delivery - engine: 14° before

Firing sequence of engine: 1-5-3-6-2-4.

Omnibus

Note remarks

Test sheet

: SCA 11,1 g : 10.02.89

Edition

Replaces Test oil

: ISO-4113

Combination no.

: 0 402 646 855

Injection pump

Pump designation : PE6P120A720RS7018

EP type number

: 0 412 626 821

Governor

Governor design: RQ200/1000PA713-3

: 0 421 801 414 Governer no.

Customer-spec. information

Customer

: SAAB-SCANIA

Engine

: DS11 73

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C

: 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 1 688 901 019

Opening

pressure, bar : 207...210

Orifice plate

diameter mm

: 0.8

Test Lines

: 1 680 750 015

Outside diameter

x Wall thickness

x Length mm

: 6.00X1.50X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm

: 5.00...5.10

: (4.95...5.15)

Rack travel in mm : 9.00...12.00

Firing order

: 1-5-3-6-2-4

Phasing

: 0-60-120-180-240-300

Tolerance + - 0

: 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed

rpm: 700

Rack travel in mm : 13.20...13.30

Del.guantity cm3/: 19.2...19.4

100 s: (18.9...19.7)

Spread

cm3 : 0.6

100 s: (0.9)

rpm : 225.0 2nd speed

Rack travel in mm: 4.7...5.1

Del.quantity cm3/: 1.4...1.8 100 s: (-)

cm3 : 0.3 Spread

100 s: (0.6)

GUIDE SLEEVE POSITION Control-lever position

Degree: -2

rpm : 600

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

rpm : 700

Aneroid pressure h: 900 Del.quantity

: 192.0...194.0 1000 : (189.0...197.0)

Spread

: 6.00 cm3

1000 : (9.00)

RATED SPEED

1st version

Setting point:

: 600

Speed rpm : 600 Rack travel in mm : 16.5

Testing:

1st rack travel in: 12.20

Speed

rpm : 1045...1060

2nd rack travel in: 4.00 Speed

rpm : 1190...1220

4th rack travel in: 1350

Speed rpm : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring

rpm : 225 Speed Rack travel in mm: 4.8

Testing:

Speed rpm : 100 Minimum rack trave: 6.30

Speed rpm : 225 Rack travel in mm : 4.70...4.90

Rack travel in mm : 2.00 Speed : 310...350 rpm

Aneroid/Altitude Compensator Test

1st version Setting

Speed rpm : 500 Pressure hPa : 900

Rack travel mm : 13.20...13.30

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 11.20...11.60

2nd pressure hPa : 405
Rack travel in m: 12.80...12.90
3rd pressure hPa : 255
Rack travel in m: 11.80...12.00

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900

Speed rpm : 1000 Del.quantity cm3/ : 187.0...195.0 1000 s: (185.0...197.0)

Aneroid pressure h: -

Speed rpm : 500 Del.quantity cm3/ : 143.0...147.0

1000 s: (141.0...149.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 12.20 peed rpm : 1045...1060 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 280.0...330.0 1000 s: (-) Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 225 Rack travel in mm : 4.70...4.90

Remarks:

Delivery-valve spring pre-tension 3.2...3.4 mm.

Permissible alteration of 3.0...3.5 mm

Because of flattening, set the spring preload on new delivery-valve holders to 2.9...3.1 mm.

Start-of-delivery setting with ROBO diaphragm.

ADDITIONAL INFORMATION

For comb. with letter index see VDT-I-400/116.

For sealing see VDT-I-400/117.

Test specifications approved by Scania on 1988-09-12

Start of delivery - engine: 14° before

Firing sequence of engine: 1-5-3-6-2-4.

Omnibus

Note remarks

Test sheet : PEN 16,2 b : 10.02.89 Edition Replaces : 12.2.88 Test oil : ISO-4113

Combination no. : 0 402 646 857

Injection pump

Pump designation : PE6P130A720RS7150 EP type number : 0 412 636 808

Governor

Governor design. : RQV250...900PA881

: D 421 813 676 Governer no.

Customer-spec. information

: VOLVO-PENTA Customer

: TAMD 162 (HD) Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

: 1 680 750 067 Test lines

Outside diameter x Wall thickness

x Length mm : 6.00X1.50X1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.60...3.70 : (3.55...3.75)
Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4

Phasing

: 0-60-120-180-240-300

Tolerance + - 0

Firing order

: 0.30 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed

rpm: 700

Rack travel in mm : 10.30...10.40

Del.guantity cm3/: 29.7...29.9

100 s: (29.3...30.3)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 250.0 Rack travel in mm: 3.7...3.9

Del.quantity cm3/: 1.7...2.2 100 s: (1.4...2.4)

cm3 : 0.5Spread 100 s: (0.7)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 250 1st speed travel mm

: 0.90...1.30 2nd speed rpm : 350

travel mm

: 2.00...2.60 3rd speed rpm : 700

: 4.40...5.00 travel mm

925 4th speed rpm

: 7.30...7.50 rpm : 985 travel mm

5th speed

: 8.10...8.50 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1 rpm : 980

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

rpm : 700 Speed

Aneroid pressure h: 900

Del.quantity : 297.0...277.0 1000 : (293.0...303.0)

Spread

cm3 : 5.00 1000 : (9.00)

RATED SPEED

1st version Control lever

position degrees: 55...63

Testina:

1st rack travel in: 9.30 Speed rpm : 925...935 2nd rack travel in: 4.00

rpm : 975...1005 Speed

4th rack travel in: 1100

rpm : 0.00...1.00Speed

LOW IDLE 1 Control lever

position degrees: 6...14

Testing:

Speed rpm : 100 Minimum rack trave: 5.30 Speed rpm : 250 Rack travel in mm : 3.70...3.90

CONSTANT REGULATION

rpm : 250...400 Speed

Aneroid/Altitude Compensator Test

1st version

Setting

: 500 Speed rpm hPa : 900 Pressure

: 10.30...10.40 Rack travel mm

Measurement

1/min : 500 Speed

1st pressure hPa : -

Rack travel in m: 7.70...7.90

2nd pressure hPa : 310 Rack travel in m: 7.90...8.00

3rd pressure hPa : 660

Rack travel in m: 9.90...10.00

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

Speed rpm : 700 Del.quantity cm3/: 192.0...196.0

1000 s: (189.0...199.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.30

rpm : 925...935 Speed

STARTING FUEL DELIVERY

Speed : 100 rpm

LOW IDLE

Speed rpm

Rack travel in mm : 3.70...3.90 Del.quantity cm3/: 17.0...22.0 1000 s: (14.5...24.5)

cm3 : 5.00 Spread

1000 s: (7.00)

Remarks:

Delivery-valve spring pre-tension

3.2...3.4 mm.

Permissible alteration of 3.0...3.5 mm

Because of flattening, set the spring preload on new delivery-valve holders to 2.9...3.1 mm.

Note remarks

Test sheet : SCA 11,1 h : 10.02.89 Edition

Replaces

: ISO-4113 Test oil

Combination no. : 0 402 646 858

Injection pump

Pump designation : PE6P120A720RS7151 : 0 412 626 824 EP type number

Governor

Governor design. : RQ200/900PA713-4 : 0 421 801 424 Governer no.

Customer-spec. information

: SAAB-SCANIA Customer

: DSC11 04 Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Openina

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 015

Outside diameter

x Wall thickness

x Length mm : 6.00X1.50X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 4.40...4.50 Prestroke mm : (4.35...4.55)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

rpm: 700 1st speed

Rack travel in mm : 12.70...12.80

Del.quantity cm3/: 17.4...17.6

100 s: (17.1...17.9)

Spread cm3 : 0.6

100 s: (0.9)

2nd speed rpm : 225.0 Rack travel in mm : 4.8...5.2 Del.quantity cm3/ : 1.6...2.0

100 s: (-) cm3 : 0.3

Spread 100 s: (0.6)

GUIDE SLEEVE POSITION Control-Lever position Degree: -2

rpm : 600 Speed

Rack travel in mm : 0.00...15.20

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700 Aneroid pressure h: 900

: 174.0...176.0 Del.quantity

1000 : (171.0...179.0)

cm3 : 6.00 Spread

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm Rack travel in mm : 7.6

Testing:

1st rack travel in: 11.70

rpm : 945...960 Speed

2nd rack travel in: 4.00

Speed rpm : 1050...1080

4th rack travel in: 1200 Speed rpm : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring

rpm Rack travel in mm: 4.9

Testina:

Speed rpm : 100 Minimum rack trave: 6.40 rpm : 225

Rack travel in mm: 4.80...5.00
Rack travel in mm: 2.00
Speed rpm: 310...350

Aneroid/Altitude Compensator Test

1st version Setting

Speed : 500 rpm hPa : 900 Pressure

: 12.70...12.80 Rack travel mm

Measurement

Speed 1/min: 500

1st pressure hPa : -

Rack travel in m: 11.40...11.80
2nd pressure hPa : 395
Rack travel in m: 12.50...12.60
3rd pressure hPa : 290

Rack travel in m: 11.90...12.10

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900 rpm : 900 Speed

Del.quantity cm3/: 171.0...179.0 1000 s: (169.0...181.0)

Aneroid pressure h: -

Speed rpm : 500 Del.quantity cm3/: 145.0...149.0 1000 s: (143.0...151.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 11.70 rpm : 945...960 Speed

LOW IDLE

Speed rpm

Rack travel in mm : 4.80...5.00

Remarks:

Delivery-valve spring pre-tension 3.2...3.4 mm.

Permissible alteration of 3.0...3.5 mm

Because of flattening, set the spring preload on new delivery-valve holders to 2.9...3.1 mm.

Start-of-delivery setting with ROBO diaphragm.

ADDITIONAL INFORMATION

For comb. with letter index see VDT-I-400/116.

For sealing see VDT-I-400/117.

Scania test specifications taken over on Sep. 5, 1988

Start of delivery - engine: 9° before TDC

Firing sequence of engine: 1-5-3-6-2-4.

Omnibus

Note remarks

Test sheet

: SCA 9,0 L 2

Edition

: 07.02.89

Replaces Test oil

: ISO-4113

Combination no.

: 0 402 646 860

Injection pump

Pump designation : PE6P120A320RS7138

EP type number

: 0 412 626 822

Governor

Governor design. : RQV350...1100PA795-1

Governer no.

: D 421 813 693

Customer-spec. information Customer

: SAAB-SCANIA

Engine

: DS9 52,53,54,55

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C

: 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly

: 1 688 901 019

Opening

pressure, bar

: 207...210

Orifice plate

diameter mm

: 0,8

Test lines

: 1 680 750 015

Outside diameter

x Wall thickness

x Length mm

: 6.00x1.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm

: 4.40...4.50

: (4.35...4.55)

Rack travel in mm : 9.00...12.00

K02

Firing order

: 1-5-3-6-2-4

Phasing

: 0-60-120-180-240-300

Tolerance + - 0

: 0.50 (0.75)

Time to cyl. no.

BASIC SETTING

1st speed

rpm: 700

Rack travel in mm : 12.20...12.30

Del.quantity cm3/: 16.5...16.7

100 s: (16.2...17.0)

Spread

Spread

cm3 : 0.6

100 s: (0.9)

rpm : 350.0

2nd speed Rack travel in mm: 4.3...4.9

Del.quantity cm3/: 2.0...2.4

100 s: (1.7...2.7) cm3 : 0.3

100 s: (0.6)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 350

travel mm

: 1.30...1.70

2nd speed

rpm : 650

travel mm

: 4.10...4.70

3rd speed travel mm : 1145

: 7.80...8.00 : 1255

4th speed travel mm

rpm

rpm

: 8.80...9.20

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1180

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version Speed

Speed

rpm : 700

Del.quantity

: 165.0...167.0

1000

: (162.0...170.0)

Spread

: 6.00

cm3 1000

: (9.00)

RATED SPEED

1st version Control lever

position degrees: 42...50

Testing:

1st rack travel in: 11.20

rpm : 1140...1150 Speed

2nd rack travel in: 4.00

Speed rpm : 1240...1270 4th rack travel in: 1400 Speed rpm : 0.00...1.00

LOW IDLE 1 Control lever

position degrees: 11...19

Testina:

Speed man : 100 Minimum rack trave: 6.10 : 350 rpm

Rack travel in mm : 4.50...4.70

Rack travel in mm : 2.00

: 370...430 Speed rpm

FUEL DELIVERY CHARACTERISTICS

1st version

: 1100 Speed rpm

Del.quantity cm3/: 163.0...171.0 1000 s: (161.0...173.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 11.20

rpm : 1140...1150 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 270.0...320.0

1000 s: (-)

Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 350 Rack travel in mm : 4.30...4.90

Del.quantity cm3/: 20.0...24.0 1000 s: (17.0...27.0) Spread cm3: 3.00 1000 s: (6.00)

Remarks:

K03

Delivery-valve spring pre-tension 3.2...3.4 mm. Permissible alteration of 3.0...3.5 mm

Because of flattening, set the spring preload on new delivery-valve holders to 2.9...3.1 mm.

Start-of-delivery setting with ROBO diaphragm.

ADDITIONAL INFORMATION

For comb. with letter index see VDT-I-400/116.

For sealing see VDT-I-400/117.

Scania test specifications taken over on Oct. 17, 1988

Start of delivery - engine: 13° before

Firing sequence of engine: 1-5-3-6-2-4.

Note remarks

: SCA 9,0 L 3 Test sheet : 07.02.89 Edition

Replaces

Test oil : ISO-4113

: 0 402 646 861 Combination no.

Injection pump

Pump designation : PE6P120A320RS7138

EP type number : 0 412 626 822

Governor

Governor design. : RQV300....925PA712-4

: 0 421 813 701 Governer no.

Customer-spec. information

Customer : SAAB-SCANIA

Engine : DS9 52,53,54,55

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Opening.

: 207...210 pressure, bar

Orifice plate

diameter mm : 0.8

: 1 680 750 015 Test lines

Outside diameter

x Wall thickness

x Length mm : 6.00x1.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 4.40...4.50 Prestroke mm

: (4.35...4.55)

Rack travel in mm : 9.00...12.00

K04

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - 0 : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 700

Rack travel in mm : 12.20...12.30

Del.quantity cm3/: 16.5...16.7

100 s: (16.2...17.0)

Spread cm3 : 0.6

100 s: (0.9)

rpm : 300.0 2nd speed

Rack travel in mm: 4.6...5.0 Del.quantity cm3/: 2.0...2.4

100 s: (-) cm3 : 0.3

Spread 100 s: (0.6)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

rpm : 300 1st speed : 1.40...1.80 travel mm

rpm : 350 2nd speed

: 1.90...2.50 travel mm

rpm : 650 3rd speed

: 4.70...5.30 travel mm

: 970 4th speed rpm

: 8.40...8.60 travel mm

5th speed : 1045 rpm

travel mm : 9.30...9.70

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 970

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 700 Speed

: 165.0...167.0 Del.quantity

: (162.0...170.0) 1000

: 6.00 Spread cm3

1000 : (9.00)

RATED SPEED

1st version Control lever

position degrees: 44...52

Testing:

1st rack travel in: 11.20 rpm : 965...975 Speed 2nd rack travel in: 4.00

rpm : 1030...1060 Speed

4th rack travel in: 1150

rpm : 0.00...1.00 Speed

LOW IDLE 1 Control lever

position degrees: 12...20

Testing:

: 100 Speed rpm Minimum rack trave: 6.20 : 300 Speed rpm

Rack travel in mm : 4.60...4.80

Rack travel in mm : 2.00

: 330...390 Speed rpm

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 1100 Del.quantity cm3/ : 163.0...171.0 1000 s: (161.0...173.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 11.20 rpm : 965...975 Speed

STARTING FUEL DELIVERY

: 100 Sneed rpm

vel.quantity cm3/: 270.0...320.0

1000 s: (-)

Rack travel in mm : 20.00...21.00

LOW IDLE

: 300 Speed rpm

Rack travel in mm : 4.60...4.80

Remarks:

Delivery-valve spring pre-tension 3.2...3.4 mm. Permissible alteration of 3.0...3.5 mm

Because of flattening, set the spring preload on new delivery-valve holders to 2.9...3.1 mm.

Start-of-delivery setting with ROBO diaphragm.

ADDITIONAL INFORMATION

For comb. with letter index see VDT-I-400/116.

For sealing see VDT-I-400/117.

Test specifications approved by Scania on 1988-09-12

Start of delivery - engine: 13° before

Firing sequence of engine: 1-5-3-6-2-4.

Note remarks

: MB 14,7 a 2 : 28.11.88 Test sheet

Edition : 6.86 Replaces Test oil : ISO-4113

: 0 402 648 817 Combination no.

Injection pump

Pump designation : PE8P120A320LS7801

EP type number : 0 412 628 806

Governor

Governor design. : RQ300/1050PA762-5

: 0 421 801 399 Governer no.

Customer-spec. information

Customer : DAIMLER-BENZ

: 0M442 A Engine

1st version kW : 260.0 : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 019 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

: 1 680 750 067 Test lines

Outside diameter

x Wall thickness

: 6.00x1.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30 : (5.15...5.35) Rack travel in mm : 20.00...21.00

: 8-7-2-6-3-5-4-1 Firing order

: 0-45-90-135-180-225-Phasina

270-315

Tolerance + - 0 : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

rpm : 500 1st speed

Rack travel in mm : 14.10...14.30

Del.quantity cm3/: 20.3...20.5

100 s: (20.0...20.8)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 300.02nd speed

Rack travel in mm: 6.0...6.4 Del.quantity cm3/: 1.6...2.2

100 s: (1.3...2.5)

cm3 : 0.6 Spread

100 s: (1.0)

GUIDE SLEEVE POSITION Control-lever position

Degree: -2

rpm : 600 Speed

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 500 Speed Aneroid pressure h: 650

: 203.0...205.0 Del.quantity

1000 : (200.0...208.0)

: 5.00 Spread cm3

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed : 600 rpm

Rack travel in mm : 20.0 FUEL DELIVERY CHARACTERISTICS Testing: 1st rack travel in: 11.80 1st version : 1095...1110 Aneroid pressure h: 1050 Speed rom 2nd rack travel in: 4.00 : 1050 Speed rpm Del.quantity cm3/: 180.0...183.0 1000 s: (177.0...186.0) : 1170...1200 Speed rpm 4th rack travel in: 1300 cm3 : 8.00 Speed rpm : 0.00...1.50 Spread 1000 s: (12.0) Aneroid pressure h: 1050 LOW IDLE 1 Setting point w/out bumper spring : 700 rpm Del.quantity cm3/: 215.0...219.0 1000 s: (212.0...222.0) : 300 rpm Rack travel in mm: 6.2 cm3 : 8.00Spread 1000 s: (12.0) Testing: : 200 Speed Aneroid pressure h: 1050 rpm Minimum rack trave: 8.00 : 850 Speed rpm Del.quantity cm3/: 206.0...210.0 1000 s: (203.0...213.0) rpm : 300 Speed Rack travel in mm : 6.00...6.40 Rack travel in mm : 2.00 cm3 : 8.00 Spread : 380...420 1000 s: (12.0) Speed rpm Aneroid pressure h: Speed rpm : 500 Del.quantity cm3/ : 149.0...151.0 1000 s: (146.0...154.0) TORQUE CONTROL : 0.75 Dimension a mm : 1050 2nd speed rpm Rack travei in m: 12.80...13.00 Spread cm3 : 8.001000 s: (12.0) : 850 3rd speed rpm Rack travel in m: 13.70...14.00 rpm : 700 4th speed Rack travel in m: 14.40...14.60 **BREAKAWAY** Aneroid/Altitude 1st version Compensator Test 1mm rack travel less than full load rack tr: 11.80 1st version Speed rpm : 1095...1110 Setting : 600 STARTING FUEL DELIVERY Speed rpm hPa : 650 Pressure : 14.10...14.30 Rack travel mm : 100 Speed rpm Del.guantity cm3/: 175.0...190.0 Measurement 1000 s: (171.0...194.0) 1/min: 600 Speed 1st pressure hPa : 300
Rack travel in m: 12.40...12.60
2nd pressure hPa : 400
Rack travel in m: 13.40...13.70
3rd pressure hPa : 850 Remarks: * Increase in control-rod travel with respect to setting at least 0.1 mm Rack travel in m: 14.20...14.30 * 4th pressure hPa : -Rack travel in m: 11.40...11.70 5th pressure hPa : 1050 Rack travel in m: 14.40...14.60 START CUT-OUT 1/min: 220 (240) Speed

Note remarks

Test sheet : MB 14,7 b 1 Edition : 03.03.89 Replaces : 12.9.86 : ISO-4113 Test oil

: 0 402 648 825 Combination no.

Injection pump

Pump designation : PE8P120A320LS7801 EP type number : 0 412 628 806

Governor

Governor design. : RQV300..1050PA797-3

: 0 421 813 627 Governer no.

Customer-spec. information

Customer : DAIMLER-BENZ

: 0M442 A Engine

: 260.0 1st version kW Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 019 assembly

Opening |

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

: 1 680 750 067 Test lines

Outside diameter

x Wall thickness

x Length mm : 6.00X1.50X1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ___

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.20...5.30 : (5.15...5.35) Prestroke mm

Rack travel in mm : 20.00...21.00

: 8-7-2-6-3-5-Firing order

Phasing : 0-45-90-135-180-225-

270-315

: 0.50 (0.75) Tolerance + - G

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm: 500

Rack travel in mm : 14.10...14.30

Del.quantity cm3/: 20.3...20.5

100 s: (20.0...20.8)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 300.0 2nd speed Rack travel in mm: 6.0...6.4

Del.quantity cm3/: 1.6...2.2 100 s: (1.3...2.5)

cm3 : 0.6Spread 100 s: (1.0)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

rpm : 300 1st speed travel mm : 1.20...1.40

: 600 2nd speed rpm

4.90...5.10 travel mm

3rd speed : 1075 rpm travel mm

: 7.40...7.60

: 1100 4th speed rpm

: 8.00...8.20 travel mm

rpm : 1150 5th speed

: 9.00...9.20 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

Speed rpm : 1125 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

2nd pressure hPa : 400 Rack travel in m: 13.40...13.70 1st version rpm : 500 3rd pressure hPa : 850 Speed Aneroid pressure h: 650 Rack travel in m: 14.20...14.30 : 203.0...205.0 4th pressure hPa : Del.quantity Rack travel in m: 11.30...11.60 5th pressure hPa : 1050 Rack travel in m: 14.30...14.50 1000 : (200.0...208.0) : 5.00 cm3 Spread 1000 : (9.00) RATED SPEED START CUT-OUT 1st version 1/min : 220 (240) Speed Control Lever position degrees: 51...59 FUEL DELIVERY CHARACTERISTICS Testing: 1st rack travel in: 11.80 1st version rpm : 1090...1100 Aneroid pressure h: 1050 Speed 2nd rack travel in: 4.00 : 1050 Speed rpm rpm : 1155...1185 Del.quantity cm3/: 180.0...183.0 1000 s: (177.0...186.0) Speed 4th rack travel in: 1300 cm3 : 8.00 rpm : 0.00...1.00Speed Spread 1000 s: (12.0) Aneroid pressure h: 1050 LOW IDLE 1 Control lever Speed rpm : 700 Del.quantity cm3/: 215.0...219.0 1000 s: (212.0...222.0) position degrees: 13...21 cm3 : 8.00 Spread Testina: 1000 s: (12.0) Aneroid pressure h: 1050 Speed rpm : 200 Minimum rack trave: 7.70 : 850 Speed rpm rpm Del.quantity cm3/: 206.0...210.0 1000 s: (203.0...213.0) Rack travel in mm : 6.00...6.40 CONSTANT REGULATION cm3 : 8.00Spread rpm : 300...450 1000 s: (12.0) Speed Aneroid pressure h: -TORQUE CONTROL rpm : 500 Speed Del.quantity cm3/: 149.0...151.0 Dimension a mm : 1.40 nd speed rpm : 1050 Rack travel in m: 12.70...12.90 rd speed rpm : 850 1000 s: (146.0...154.0) 2nd speed rpm cm3 : 8.00Spread 1000 s: (12.0) 3rd speed rpm Rack travel in m: 13.70...14.00 : 700 rpm 4th speed Rack travel in m: 14.30...14.50 **BREAKAWAY** Aneroid/Altitude 1st version 1mm rack travel less than Compensator Test full load rack tr: 11.80 rpm : 1090...1100 1st version Speed Setting : 600 STARTING FUEL DELIVERY Speed rpm hPa : 650 Pressure : 14.10...14.30 Rack travel mm : 100 Speed rpm Del.quantity cm3/: 175.0...190.0 1000 s: (171.0...194.0) Measurement 1/min: 600 Speed 1st pressure hPa : 300 Rack travel in m: 12.40...12.60 Remarks:

K09

* Increase in control-rod travel with respect to setting at least 0.1 mm

Note remarks

Test sheet : SCA 14,0 h1 : 07.02.89 : 15.1.88 Edition Replaces : ISO-4113 Test oil

Combination no. : 0 402 648 836

Injection pump

Pump designation : PE8P12OA92O/4LS7125T

: 0 412 628 824 EP type number

Governor

Governor design. : RQV200...950PA736-4

: 0 421 813 646 Governer no.

Customer spec. information

: SAAB-SCANIA Customer

: DSC14 03 L09,L10 Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

: 1 680 750 015 Test lines

Outside diameter x Wall thickness

: 6.00x1.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.00...5.10 Prestroke mm

: (4.95...5.15)

Rack travel in mm : 9.00...12.00

: 1- 2- 7- 3- 4- 5-Firing order

: 0-45-90-135-180-225-Phasing

270-315

: 0.50 (0.75) Tolerance + - °

Time to cyl. no. : 1

BASTC SETTING

rpm: 700 1st speed

Rack travel in mm : 13.80...13.90

Del.quantity cm3/: 22.1...22.3

100 s: (21.8...22.6)

cm3 : 0.6Spread

100 s: (0.9)

2nd speed rpm : 225.0 Rack travel in mm: 4.9...5.3

Del.quantity cm3/: 1.6...2.0

100 s: (-) cm3 : 0.3 Spread

100 s: (0.6)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 225

: 1.20...1.60 travel mm

rpm : 350 2nd speed

2.30...2.90 travel mm

: 650 3rd speed rpm

: 4.40...5.00 travel mm

rpm : 995 : 7.70...7.90 4th speed travel mm

rpm : 1125 5th speed

: 9.30...9.70 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

Speed rpm : 1040 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700 Aneroid pressure h: 900

Del.quantity : 221.0...226.0)

K11

cm3 : 6.00 Spread

1000 : (9.00)

RATED SPEED

1st version Control Lever

position degrees: 56...64

Testing:

1st rack travel in: 12.80 Speed rpm : 990...1000 2nd rack travel in: 4.00

rpm : 1110...1140 Speed

4th rack travel in: 1250

rpm : 0.00...1.00Speed

LOW IDLE 1 Control lever

position degrees: 7...15

Testina:

: 100 Speed rpm Minimum rack trave: 6.50 : 225 Speed rpm

Rack travel in mm : 4.90...5.10

Rack travel in mm : 2.00 : 360...420 Speed rom

Aneroid/Altitude Compensator Test

1st version Setting

: 500 Speed rpm hPa : 900 Pressure

Rack travel mm : 13.80...13.90

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 10.60...11.00 2nd pressure hPa : 445

Rack travel in m: 12.90...13.00 3rd pressure hPa : 325 Rack travel in m: 11.40...11.60

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900

Speed rpm : 950
Del.quantity cm3/: 211.0...219.0
1000 s: (209.0...221.0)

Aneroid pressure h: -

Speed : 500 rpm

Del.quantity cm3/: 138.0...142.0 1000 s: (136.0...144.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.80

rpm : 990...1000 Speed

STARTING FUEL DELIVERY

rpm : 100

Del.quantity cm3/: 240.0...290.0 1000 s: (-)

Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 225 Rack travel in mm : 4.90...5.10

Remarks:

Test specifications approved by Scania

on 1987-12-15

Because of flattening, set the spring preload on new delivery-valve holders

to 2.9...3.1 mm.

ADDITIONAL INFORMATION

Start-of-delivery setting with ROBO

diaphragm.

For comb. with letter index see

VDT-I-400/116.

For sealing see VDT-I-400/117.

* Increase in control-rod travel with

respect to setting at least 0.1 mm

Start of delivery - engine: 16° before

TDC

Engine firing sequence: 1-5-4-2-6-3-7-8

	•	
BOSCH INJ. PUMP T	EST SPECIFICATIONS	+
Note remarks		Ŧ
Test sheet Edition Replaces Test oil	: SCA 14,0 h2 : 07.02.89 : 29.1.88 : ISO-4113	++++
Combination no.	: 0 402 648 839	Ŧ
Covernor	: PE8P120A920/4LS7125T : 0 412 628 824 : POV200 950PA736-1	
Governer no.	: RQV200950PA736-1 : 0 421 813 551	+
Customer-spec. in Customer	formation : SAAB-SCANIA	1
Engine	: DSC14 03	Ŧ
TEST BENCH REQUIR	EMENTS	Ŧ
Test oil inlet temp. °C	: 3842	
Overflow valve	: 1 417 413 025	I
Inlet press., bar	: 1.50	Ŧ
Test nozzle holder assembly	: 1 688 901 019	H
Opening pressure, bar	: 207210	1
Orifice plate diameter mm	: 0,8	+++
Test lines	: 1 680 750 015	‡
Outside diameter x Wall thickness x Length mm	: 6.00x1.50x600	+++
(A) Injection pump Insp. values i Set equal deli per values	in parentheses ivery quant.	T + + +
BEGINNING OF DELIV Test pressure, bar		+++
Prestroke mm	: 5.005.10	Ŧ
Pack travel in mm	. (4.70).101 . 0 nn 12 nn	I

```
: 1- 2- 7- 3- 4- 5-
6- 8
Firing order
                   : 0-45-90-135-180-225-
270-315
Phasing
                    : 0.50 (0.75)
Tolerance + - 0
Time to cyl. no.
                  : 1
BASIC SETTING
1st speed
               rpm: 700
Rack travel in mm : 13.80...13.90
Del.quantity cm3/: 22.1...22.3
              100 s: (21.8...22.6)
              cm3 : 0.6
Spread
              100 s: (0.9)
              rpm : 225.0
2nd speed
Rack travel in mm : 4.9...5.3 Del.quantity cm3/ : 1.6...2.0
              100 s: (-)
Spread
              cm3 : 0.3
              100 s: (0.6)
(B) Setting of injection pump
    with governor
GUIDE SLEEVE TRAVEL
              rpm : 225
1st speed
                   : 1.20...1.60
  travel mm
                   : 350
: 2.30...2.90
                  :
2nd speed
              rpm
  travel mm
                  : 650
3rd speed
              rpm
  travel mm
                   : 4.40...5.00
                   : 995
: 7.70...7.90
4th speed
              rpm
  travel mm
                  : 1125
5th speed
              rpm
  travel mm
                   : 9.30...9.70
GUIDE SLEEVE POSITION
Control-lever position
            Degree: -1 rpm : 1040
Speed
Rack travel in mm : 15.20...17.80
FULL LOAD DELIV. AT FULL LOAD STOP
1st version
             rpm : 700
Speed
Aneroid pressure h: 900
Del.quantity : 221.0...226.0)
```

Rack travel in mm : 9.00...12.00

cm3 : 6.00 Spread

: (9.00) 1000

RATED SPEED

1st version Control lever

position degrees: 56...64

Testing:

1st rack travel in: 12.80 rpm : 990...1000 Speed

2nd rack travel in: 4.00

Speed rpm: 1110...1140 4th rack travel in: 1250

Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever

position degrees: 6...14

Testing:

rpm : 100 Speed Minimum rack trave: 6.50 rpm : 225 Speed

Rack travel in mm: 4.90...5.10
Rack travel in mm: 2.00
Speed rpm: 360...420

Aneroid/Altitude Compensator Test

1st version

Setting

: 500 Speed rom

hPa : 900 Pressure

: 13.80...13.90 Rack travel mm

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 11.20...11.60

2nd pressure hPa : 365
Rack travel in m: 12.80...12.90
3rd pressure hPa : 215
Rack travel in m: 11.90...12.10

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900

: 950 Speed rpm

Del.quantity cm3/: 211.0...219.0 1000 s: (209.0...221.0)

Aneroid pressure h: -

: 500 Speed rom

Del.quantity cm3/: 158.0...162.0 1000 s: (156.0...164.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.80

rpm : 990...1000 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 240.0...290.0

1000 s: (-)

Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 225 Rack travel in mm : 4.90...5.10

Remarks:

Test specifications approved by Scania on 1987-12-15

Because of flattening, set the spring preload on new delivery-valve holders to 2.9...3.1 mm.

ADDITIONAL INFORMATION

Start-of-delivery setting with ROBO diaphragm.

For comb. with letter index see VDT-I-400/116.

For sealing see VDT-I-400/117.

* Increase in control-rod travel with respect to setting at least 0.1 mm

Start of delivery - engine: 16° before

TDC

Engine firing sequence: 1-5-4-2-6-3-7-8

Note remarks

: MB 14,7 j : 07.02.89 Test sheet Edition : 8.6.88 Replaces : ISO-4113 Test oil

: 0 402 648 844 Combination no.

Injection pump

Pump designation: PE8P120A320LS7816 EP type number : 0 412 628 829

Governor

Governor design. : RQ300/1050PA717-2

: 0 421 801 439 Governer no.

Customer-spec. information

: DAIMLER-BENZ Customer

: 0M442 LA Engine

: 353.0 : 2100 1st version kW Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 019 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

: 1 680 750 067 Test lines

Outside diameter

x Wall thickness

: 6.00x1.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30

: (5.15...5.35)

Rack travel in mm : 20.00...21.00

Firing order : 8-7-2-6-3-5-4-1

Phasina : 0-45-90-135-180-225-

270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

rpm : 6001st speed

Rack travel in mm : 13.60...13.80

Del.quantity cm3/: 23.4...23.7

100 s: (23.1...24.0)

cm3 : 0.6Spread

100 s: (0.9)

2nd speed rpm : 300.0 Rack travel in mm : 5.9...6.5 Del.quantity cm3/: 1.6...2.2

100 s: (1.3...2.5)

cm3 : 0.6Spread 100 s: (1.0)

GUIDE SLEEVE POSITION Control-lever position

Degree: -2 rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600 Aneroid pressure h: 900

: 234.0...237.0 Del.quantity 1000 : (231.0...240.0)

: 6.00 cm3 Spread

1000 : (9.00)

RATED SPEED

1st version

Setting point:

: 600 Speed rpm

Rack travel in mm: 20.0 Testing: 1st rack travel in: 13.40 rpm : 1095...1110 Speed 2nd rack travel in: 4.00 : 1150...1180 Speed rpm 4th rack travel in: 1300 rpm : 0.00...1.50Speed LOW IDLE 1 Setting point w/out bumper spring rpm Rack travel in mm: 6.2 Testing: Speed rpm : 200 Minimum rack trave: 7.80 speed rpm : 300 Rack travel in mm : 5.90...6.50 Rack travel in -Rack travel in mm : 2.00 : 380...420 Speed rom TORQUE CONTROL Dimension a mm : 0.40 2nd speed nd speed rpm : 1050 Rack travel in m: 14.40...14.60 3rd speed rpm : 800 Rack travel in m: 14.90...15.10 Aneroid/Aktitude Compensator Test 1st version Setting : 600 Speed rpm hPa : 900 Pressure Rack travel mm : 13.60...13.80 Measurement 1/min: 600 Speed 1st pressure hPa : 350 Rack travel in m: 11.10...11.30 2nd pressure hPa : 650 Rack travel in m: 12.80...13.00 3rd pressure hPa : 1050 Rack travel in m: 13.70...13.90 * 4th pressure hPa : -Rack travel in m: 9.90...10.20 5th pressure hPa : 1500 Rack travel in m: 14.80...15.00 START CUT-OUT 1/min: 220 (240) Speed

FUEL DELIVERY CHARACTERISTICS

1st version Aneroid pressure h: 1600 Speed 1050 rpm Del.quantity cm3/: 252.0...256.0 1000 s: (249.0...259.0) cm3 : 8.00 1000 s: (12.0) Spread Aneroid pressure h: 1600 : 800 Speed man Del.quantity cm3/: 263.0...267.0 1000 s: (260.0...270.0) : 8.00 Spread cm3 1000 s: (12.0) Aneroid pressure h: Speed rpm : 500 Del.quantity cm3/ : 145.0...147.0 1000 s: (142.0...150.0) cm3 : 8.00 Spread 1000 s: (12.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 13.40 rpm : 1095...1110 Speed STARTING FUEL DELIVERY : 100 Speed rpm Del.quantity cm3/: 240.0...260.0 1000 s: (236.0...264.0)

Remarks:

* Increase in control-rod travel with respect to setting at least 0.1 mm

Note remarks

Test sheet : WAU 24,0 a : 17.02.89 Edition : 5.8.88 Replaces : ISO-4113 Test oil

Combination no. : 0 402 648 847

Injection pump

Pump designation : PE8P130A920/4RS7158 EP type number : 0 412 638 801

Governor

Governor design. : RQV350...900PA760-1

Governer no. : 0 421 813 617

Customer-spec. information Customer : WAUKESHA

Engine : H24DS/DSI

TEST BENCH REQUIREMENTS

Test oil

: 38...42 inlet temp. °C

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Openina

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

: 1 680 750 067 Test lines

Outside diameter

x Wall thickness

x Length mm : 6.00x1.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 3.60...3.70 Prestroke mm : (3.55...3.75)

Rack travel in mm : 9.00...12.00

: 1- 4- 2- 6- 8- 5 - 7- 3 Firing order

Phasina : 0-45-090-135-180-225

-270-315 : 0.50 (0.75) Tolerance + - 0

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 900

Rack travel in mm : 11.70...11.80

Del.quantity cm3/: 36.8...37.1

100 s: (26.5...37.5)

Spread cm3 : 0.6

100 s: (1.0)

rpm : 350.0 2nd speed Rack travel in mm : 4.2...4.4 Del.quantity cm3/: 1.5...2.1 100 s: (1.1...2.5)

cm3 : 1.0 Spread 100 s: (1.4)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 350 1st speed

: 1.50...1.80 travel mm 2nd speed rpm : 700 travel mm : 5.30...5.70

: 950 3rd speed rpm

travel mm : 8.40...8.60

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 950 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

: 900 Speed rpm

368.5...371.5 Del.quantity 1000 : (265.0...375.0)

: 6.00 : (10.00) Spread cm3 1000

RATED SPEED

K17

1st version Control Lever position degrees: 57...65 Testina: 1st rack travel in: 10.70 Speed rpm: 940...950 2nd rack travel in: 4.00 rpm : 1030...1060 Speed 4th rack travel in: 1150 rpm : 0.00...1.00Speed LOW IDLE 1 Control Lever position degrees: 5...13 Testing: Speed rpm : 100 Minimum rack trave: 5.80 Speed rpm : 350 Rack travel in mm : 4.20...4.40 CONSTANT REGULATION rpm : 350...450 Speed BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 10.70 rpm : 940...950 Speed INTERMEDIATE RATED SPEED Rack travel in mm : 4.00 STARTING FUEL DELIVERY Speed : 100 rpm LOW IDLE Speed rpm : 350 Rack travel in mm : 4.20...4.40 Del.quantity cm3/: 15.0...21.0 1000 s: (11.0...25.0) cm3 : 10.00Spread 1000 s: (14.00) Remarks: **APPLICATION** Navy

Note remarks

: 17.02.89 Edition : 5.8.88 Replaces

: ISO-4113 Test oil

: 0 402 648 848 Combination no.

Injection pump

Pump designation: PE8P130A920/4RS7158

EP type number : 0 412 638 801

Governor

Governor design: : RQ350/925PA892 : 0 421 801 441 Governer no.

Customer-spec. information Customer : WAUKESHA

Engine : H24DS/DSI

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter

x Wall thickness

: 6.00x1.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.60...3.70

: (3.55...3.75) Rack travel in mm : 9.00...12.00

Test sheet : WAU 24,0 a1

Phasing

: 0-45-090-135-180-225

: 1- 4- 2- 6- 8- 5

-270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no.

BASIC SETTING

Firing order

rpm: 900 1st speed

Rack travel in mm : 11.70...11.80

Del.quantity cm3/: 36.8...37.1

100 s: (36.5...37.5)

Spread cm3 : 0.6

100 s: (1.0)

rpm : 350.0 2nd speed Rack travel in mm : 4.2...4.4 Del.quantity cm3/ : 1.5...2.1

100 s: (1.1...2.5)

cm3 : 1.0Spread

100 s: (1.4)

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 600

Rack travel in mm : 15.60...16.40

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm

Speed Del.quantity 1000 : 368.5...371.5 : (365.0...375.0)

Spread cm3 : 6.00

1000 : (10.00)

RATED SPEED

1st version

Setting point:

Speed : 600 rpm Rack travel in mm : 16.0

Testing:

1st rack travel in: 10.70

rpm : 970...985 Speed 2nd rack travel in: 4.00

: 1040...1070 Speed rpm

K19

4th rack travel in: 1150 rpm : 0.00...1.00 Speed LOW IDLE 1 Setting point w/out bumper spring Speed rpm : 350 Rack travel in mm : 4.3 Testina: : 100 Speed rom Minimum rack trave: 5.80 350 Speed rpm Rack travel in mm : 4.20...4.40 Rack travel in mm : 2.00 Speed rpm : 400...440 BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 10.70 rpm : 970...985 Speed INTERMEDIATE RATED SPEED Rack travel in mm : 4.00 STARTING FUEL DELIVERY Speed : 100 rpm LOW IDLE Speed rpm : 350
Rack travel in mm : 4.20...4.40
Del.quantity cm3/ : 15.0...21.0
1000 s: (11.0...25.0) cm3 : 10.00Spread 1000 s: (14.00) Remarks:

APPLICATION

Navy

Note remarks

Test sheet : MB 14,7 o : 07.02.89 Edition

Replaces

: ISO-4113 Test oil

Combination no. : 0 402 648 855

Injection pump

Pump designation : PE8P120A320LS7823 EP type number : 0 412 628 835

Governor

Governor design. : RQV350..1050PA870-5

: 0 421 813 735 Governer no.

Customer-spec. information

: DAIMLER-BENZ Customer

: 0M442 LA Enaine

1st version kW : 353.0 : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

assembly : 1 688 901 019

Openina .

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter x Wall thickness

x Length mm : 6.00x1.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm

: 5.20...5.30 : (5.15...5.35) Rack travel in mm : 20.00...21.00

: 8-7-2-6-3-5-Firing order

Phasing : 0-45-90-135-180-225-

270-315

: 0.50 (0.75) Tolerance + - °

Time to cyl. no. : 8

BASIC SETTING

rpm: 600 1st speed

Rack travel in mm : 13.60...13.80

Del.quantity cm3/: 23.4...23.7

100 s: (23.1...24.0)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 350.02nd speed Rack travel in mm: 5.9...6.5

Del.quantity cm3/: 1.6...2.2 100 s: (1.3...2.5)

cm3 : 0.6Spread

100 s: (1.0)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 350

: 1.90...2.10 travel mm

rpm : 800 2nd speed

travel mm : 4.90...5.20

: 1100 3rd speed rpm

travel mm : 7.90...8.30

: 1175 4th speed rpm

: 9.30...9.90 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1100 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

4th pressure hPa : 1500 Rack travel in m: 14.80...15.00 Speed rpm : 600 Aneroid pressure h: 900 : 234.0...237.0 : (231.0...240.0) Del.quantity 5th pressure hPa : -1000 Rack travel in m: 9.90...10.20 : 5.00 Spread cm3 : (9.00) 1000 START CUT-OUT RATED SPEED Speed 1/min : 220 (240) 1st version FUEL DELIVERY CHARACTERISTICS Control Lever position degrees: 53...61 1st version Testina: Aneroid pressure h: 1600 Speed rpm : 1050 Del.quantity cm3/ : 252.0...256.0 1st rack travel in: 13.40 rpm : 1090...1100 Speed 2nd rack travel in: 4.00 1000 s: (249.0...259.0) : 1160...1190 cm3 : 8.00Speed rom Spread 4th rack travel in: 1300 1000 s: (12.0) Aneroid pressure h: 1600 Speed rpm : 0.00...1.00Speed rpm : 800 Del.quantity cm3/: 263.0...267.0 1000 s: (260.0...270.0) LOW IDLE 1 Control lever cm3 : 8.00 position degrees: 18...26 Spread 1000 s: (12.0) Testina: Aneroid pressure h: -Speed : 250 Speed rpm : 500 Del.quantity cm3/ : 145.0...147.0 rpm Minimum rack trave: 8.00 : 350 1000 s: (142.0...150.0) rom Rack travel in mm : 5.90...6.50 cm3 : 8.00Spread 1000 s: (12.0) CONSTANT REGULATION rpm : 300...500 Speed **BREAKAWAY** TORQUE CONTROL Dimension a mm : 0.50 1st version nd speed rpm : 1050 Rack travel in m: 14.40...14.60 2nd speed 1mm rack travel less than : 800 3rd speed rpm full load rack tr: 13.40 Rack travel in m: 14.90...15.10 rpm : 1090...1100 Speed Aneroid/Altitude STARTING FUEL DELIVERY Compensator Test : 100 Speed rpm Del.quantity cm3/: 240.0...260.0 1000 s: (236.0...264.0) 1st version Setting : 600 Speed rpm hPa : 900 Pressure Remarks: : 13.60...13.80 Rack travel mm : Measurement Speed $1/\min : 600$ 1st pressure hPa : 350 Rack travel in m: 11.10...11.30 2nd pressure hPa : 1050 Rack travel in m: 13.70...13.90
3rd pressure hPa : 1350
Rack travel in m: 14.50...14.70

Note remarks

: MB 14,7 a11 : 03.03.89 Test sheet Edition

Replaces

Test oil : ISO-4113

Combination no. : 0 402 648 859

Injection pump

Pump designation : PE8P120A320LS7801-1

: 0 412 628 818 EP type number

Governor

Governor design: : RQV350...950PA866-4 Governer no: : 0 421 813 737

Customer-spec. information

Customer : DAIMLER-BENZ

: OM442 A Engine

1st version kW : 264.0 : 1900 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 019 assembly

Openina

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter x Wall thickness

: 6.00X1.50X1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30 : (5.15...5.35)
Rack travel in mm : 20.00...21.00

: 8- 7- 2- 6- 3- 5-Firing order

: 0-45-90-135-180-225-Phasing

270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm: 930

Rack travel in mm : 15.30...15.40

Del.quantity cm3/: 20.6...20.8

100 s: (20.3...21.1)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 350.02nd speed

Rack travel in mm: 6.2...6.6 Del.quantity cm3/: 1.6...2.2 100 s: (1.3...2.5)

cm3 : 0.6Spread

100 s: (1.0)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

1st speed rom : 350 : 1.40...1.60 travel mm

2nd speed rpm : 425

travel mm : 2.40...2.60

: 800 3rd speed rpm

: 5.30...5.60 rpm : 1000 travel mm

4th speed

: 7.80...8.20 : 1100 travel mm

5th speed rpm

: 9.40...9.90 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1000 Speed

Rack travel in mm : 16.50...18.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version rpm : 930 Speed Aneroid pressure h: 950 Del.quantity : 206.0...208.0 1000 : (203.0...211.0) cm3 : 5.00 Spread 1000 : (9.00) RATED SPEED 1st version Control Lever position degrees: 51...59 Testing: 1st rack travel in: 14.40 rpm : 980...990 Speed 2nd rack travel in: 4.00 rpm : 1080...1110 Speed 4th rack travel in: 1200 rpm : 0.00...1.00Speed LOW IDLE 1 Control Lever position degrees: 18...26 Testing: Speed : 250 rpm Minimum rack trave: 8.00 rpm : 350 Rack travel in mm : 6.20...6.40 CONSTANT REGULATION rpm : 350...550 Speed TORQUE CONTROL Dimension a mm Torque control curve - 1st version rpm : 950 1st speed Rack travel in m: 15.30...15.40 GOS: mar 2nd speed Rack travel in m: 16.40...16.60 3rd speed rpm : 900 Rack travel in m: 15.90...16.10 Aneroid/Altitude Compensator Test 1st version Setting : 600 Speed rpm Pressure hPa : -Rack travel mm : 10.90...11.30 Measurement 1/min: 600 Speed

Rack travel in m: 11.70...11.90 2nd pressure hPa : 700 Rack travel in m: 13.80...14.00 START CUT-OUT 1/min : 270 (290) Speed FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 950 . **80**0 Speed rpm Del.quantity cm3/: 233.0...237.0 1000 s: (230.0...240.0) cm3 : 8.00Spread 1000 s: (12.0) Aneroid pressure h: 950 Speed rpm Del.quantity cm3/: 167.0...169.0 * 1000 s: (164.0...172.0) cm3 : 8.00Spread 1000 s: (12.0) Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/ : 143.0...145.0 1000 s: (140.0...148.0) cm3 : 8.00 Spread 1000 s: (12.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 14.40 rpm : 980...990 Speed STARTING FUEL DELIVERY rpm : 100 Speed Del.quantity cm3/: 190.0...210.0 1000 s: (186.0...214.0) Remarks: * = Set at reduced-delivery stop.

K24

1st pressure hPa : 450

Note remarks

: MB 18,3 m 1 : 07.02.89 Test sheet Edition : 2.9.88 Replaces Test oil : ISO-4113

Combination no. : 0 402 649 804

Injection pump

Pump designation : PE10P120A320LS7809-1

EP type number : 0 412 629 801

Governor

Governor design. : RQV300..1050PA797-6

: 0 421 813 705 Governer no.

Customer-spec. information

: DAIMLER-BENZ Customer

Engine : 0M443 A

: 331.0 : 2100 1st version kW Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 130...150

Test nozzle holder

: 1 688 901 019 assembly

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter

x Wall thickness

: 6.00x1.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 4.00...4.10 : (3.95...4.15) Prestroke mm

Rack travel in mm : 20.00...21.00 : 10- 9- 4- 1-7 Firing order

: 0-45-72-117-144-189-Phasing

216-261-288-333

Tolerance + - 0 : 0.50 (0.75)

Time to cyl. no.: 10

BASIC SETTING

rpm: 1050 1st speed

Rack travel in mm : 13.30...13.40

Del.quantity cm3/: 18.7...19.0

100 s: (18.4...19.3)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 300.02nd speed

Rack travel in mm: 6.5...6.8 Del.quantity cm3/: 1.6...2.2

100 s: (1.3...2.5)

cm3 : 0.6 Spread

100 s: (1.0)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 300 1st speed

: 1.20...1.40 travel mm

2nd speed 600 rpm

travel mm : 4.90...5.20

rpm : 800 3rd speed

: 5.80...6.20 : 1025 travel mm

4th speed rpm

: 8.50...9.00 travel mm

rpm : 1175 5th speed

: 9.50...10.10 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1100 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version rpm : 1050 Speed Aneroid pressure h: 900

Del.quantity : 187.0...190.0

1000 : (184.0...193.0)

Spread cm3 : 5.00 1000 : (9.00) RATED SPEED 1st version Control lever position degrees: 53...61 Testing: 1st rack travel in: 12.30 Speed rpm : 1090...1100 2nd rack travel in: 4.00 Speed rpm : 1150...1180 4th rack travel in: 1300 rpm : 0.00...1.00 Speed LOW IDLE 1 Control lever position degrees: 19...27 Testina: : 200 Speed man Minimum rack trave: 8.60 rpm : 300 Rack travel in mm : 6.50...6.80 CONSTANT REGULATION rpm : 300...400 Speed TORQUE CONTROL Dimension a mm :? Torque control curve - 1st version 1st speed rpm : 1050 Rack travel in m: 13.30...13.40 2nd speed rpm : 750 Rack travel in m: 14.20...14.40 Aneroid/Altitude Compensator Test 1st version Setting Speed : 500 man hPa : -Pressure : 11.50...11.80 Rack travel mm Measurement Speed 1/min: 500 1st pressure hPa : 300

Rack travel in m: 12.10...12.30

2nd pressure hPa : 550

Rack travel in m: 13.50...13.70 START CUT-OUT 1/min : 220 (240) Speed FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 900 rpm : 600 Speed Del.quantity cm3/: 198.0...202.0 1000 s: (195.0...205.0) cm3 : 8.00 Spread 1000 s: (12.0) Aneroid pressure h: -1000 s: (12.0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 12.30 Speed rpm : 1090...1100 STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/ : 220.0...240.0 1000 s: (216.0...244.0) Remarks: •

Note remarks

: MB 18,3 p : 07.02.89 Test sheet Edition : 26.8.88 Replaces

Test oil : ISO-4113

Combination no. : 0 402 649 805

Injection pump

Pump designation : PE10P120A320LS7817

EP type number : 0 412 629 803

Governor

Governor design. : RQ300/1250PA856-1

: 0 421 801 449 Governer no.

Customer-spec. information

: DAIMLER-BENZ Customer

: 0M443 LA Engine

: 400.0 1st version kW : 2500 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 130...150

Test nozzle holder

: 1 688 901 019 assembly

Openina

: 207...210 pressure, bar

Orifice plate

diameter mm : 0.8

Test lines : 1 680 750 067

Outside diameter

x Wall thickness

x Length mm : 6.00X1.50X1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 4.00...4.10 : (3.95...4.15) Prestroke mm

Rack travel in mm : 20.00...21.00

: 10- 9- 4- 1- - 6- 3- 5-Firing order 7

: 0-45-72-117-144-189-Phasing

216-261-288-333

Tolerance + - 0 : 0.50 (0.75)

Time to cyl. no. : 10

BASIC SETTING

rpm: 600 1st speed

Rack travel in mm : 15.50...15.70

Del.quantity cm3/: 22.4...22.6

100 s: (22.1...22.9)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 300.0 2nd speed

Rack travel in mm: 6.6...6.8 Del.quantity cm3/: 1.6...2.2

100 s: (1.3...2.5)

cm3 : 0.6Spread

100 s: (1.0)

GUIDE SLEEVE POSITION Control-lever position

Degree: -2

rpm : 600 Speed

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 600 Speed Aneroid pressure h: 1050

Del.quantity : 224.0...229.0)

: 5.00 : (9.00) Spread cm3

1000

RATED SPEED

1st version

Setting point:

Speed : 600 rpm

Rack travel in mm : 20.0 Testina: 1st rack travel in: 14.40 rpm : 1295...1310 Speed 2nd rack travel in: 4.00 speed rpm : 1390...1420 4th rack travel in: 1500 Speed rpm LOW IDLE 1 Setting point w/out bumper spring rom Rack travel in mm: 6.7 Testing: Speed : 200 rpm Minimum rack trave: 8.10 : 300 Speed rom Rack travel in mm : 6.60...6.80 Rack travel in mm : 2.00 : 380...420 Speed man TORQUE CONTROL : 1250 2nd speed rom Rack travel in m: 15.40...15.60 : 800 3rd speed rpm Rack travel in m: 16.10...16.30 Aneroid/Altitude Compensator Test 1st version Settina : 600 Speed rom hPa : 1050 Pressure : 16.10...16.30 Rack travel mm Measurement 1/min : 600Speed 1st pressure hPa : 400 Rack travel in m: 13.20...13.40 2nd pressure hPa : 750 Rack travel in m: 15.20...15.40

3rd pressure hPa : 1250

Rack travel in m: 16.20...16.40

4th pressure hPa : 1500 Rack travel in m: 16.60...16.80 5th pressure hPa : -Rack travel in m: 11.50...11.80 START CUT-OUT 1/min: 220 (240) Speed FUEL DELIVERY CHARACTERISTICS

1st version Aneroid pressure h: 1500 : 1250 Speed rpm Del.quantity cm3/: 222.0...226.0 1000 s: (219.0...229.0) Spread cm3 : 8.00 1000 s: (12.0) Aneroid pressure h: 1500 Speed rpm : 800 Del.quantity cm3/: 235.0...239.0 1000 s: (232.0...242.0) Spread : 8.00 cm3 1000 s: (12.0) Aneroid pressure h: -: 500 Speed rom Del.quantity cm3/: 129.0...131.0 1000 s: (126.0...134.0) : 8.00 Spread cm3 1000 s: (12.0) **BREAKAWAY** 1st version

1mm rack travel less than

full load rack tr: 14.40 Speed : 1295...1310 rpm

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 230.0...250.0 1000 s: (226.0...254.0)

Remarks:

Prestroke mm : 4.90...5.00 : (4.85...5.05) Rack travel in mm : 9.00...12.00 Firing order : 10- 9- 4- 1-- 6- 3- 5-BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : MAN 18,2 d1 : 07.02.89 Edition Replaces : ISO-4113 Test oil : 0-45-72-117-144-189-216-261-288-333 Phasing : 0 402 649 807 Combination no. Tolerance + - 0 : 0.50 (0.75) Injection pump Pump designation : PE10P120A520LS7811 Time to cyl. no. : 10 : 0 412 629 802 EP type number BASIC SETTING Governor Governor design. : RQV250...1150PA902 Governer no. : 0 421 813 720 1st speed rpm: 1150 Rack travel in mm : 13.30...13.40 Customer-spec. information : MAN Customer Del.guantity cm3/: 28.4...28.6 : D 2840 LX Engine 100 s: (28.1...28.9) 1st version kW : 603.0 Rated speed : 2300 Spread cm3 : 0.5100 s: (0.9) TEST BENCH REQUIREMENTS rpm : 500.0 Test oil 2nd speed inlet temp. °C : 38...42 Rack travel in mm : 8.7...8.9 Del.quantity cm3/: 14.1...14.7 100 s: (13.8...15.0) Overflow valve : 1 417 413 025 Spread cm3 : 0.8100 s: (1.2) 3rd speed rpm : 250
Rack travel in mm : 7.30...7.50
Del.quantity cm3/ : 5.3...6.0 ** Inlet press., bar: 1.50 Test nozzle holder 100 s: (-) : 1 688 901 019 assembly cm3 Spread Openina (100 s: (-) : 207...210 pressure, bar (B) Setting of injection pump Orifice plate with governor diameter mm : 0,8 GUIDE SLEEVE TRAVEL rpm : 250 1st speed 1.10...1.50 Test lines : 1 680 750 067 travel mm 500 2nd speed rpm Outside diameter 3.80...4.20 travel mm x Wall thickness 3rd speed 850 rpm : 8.50...8.90 : 1150 : 6.00x1.50x1000 x Length mm travel mm 4th speed rpm : 9.50...9.70 (A) Injection pump setting values travel mm

: 1400

: 13.00...14.00

rpm

Degree: -1 rpm : 1200

5th speed

Speed

travel mm

GUIDE SLEEVE POSITION

Control-lever position

BEGINNING OF DELIVERY Test pressure, bar: 25...27

per values

Insp. values in parentheses

Set equal delivery quant.

L01

Rack travel in mm: 15.20...17.80 Speed 1/min : 200 (220) FULL LOAD DELIV. AT FULL LOAD STOP FUEL DELIVERY CHARACTERISTICS 1st version rpm : 1150 Speed 1st version Aneroid pressure h: 1300 Aneroid pressure h: -Del.quantity : 284.0...289.0) rpm_ : 500 Speed Del.quantity cm3/: 149.0...151.0 1000 s: (146.0...154.0) : 5.00 1000 : (9.00) RATED SPEED BREAKAWAY 1st version 1st version Control lever 1mm rack travel less than position degrees: 79...87 full load rack tr: 12.30 rpm : 1190...1200 Testing: Speed 1st rack travel in: 12.30 rpm : 1190...1200 STARTING FUEL DELIVERY Speed 2nd rack travel in: 4.00 Speed rpm : 1345...1375 4th rack travel in: 1450 Speed rpm : 0.00...1.00 Speed rpm : 100 Del.quantity cm3/ : 100.0...120.0** 1000 s: (-) LOW IDLE 1 Control lever HIGH IDLE position degrees: 18...26 1st version rpm : 500 * Speed Testing: Rack travel in mm : 7.20...7.40 Speed rpm : 100 Del.quantity cm3/: -1000 s: (-) Minimum rack trave: 8.90 Speed rpm : 250
Rack travel in mm : 7.30...7.50
Rack travel in mm : 2.00 2nd version rpm : 430...490 rpm : 500 Speed Speed Rack travel in mm : 8.00...8.20 Del.quantity cm3/ : 10.0...130.0 Aneroid/Altitude Compensator Test LOW IDLE Speed rpm : 250
Rack travel in mm : 7.30...7..50
Del.quantity cm3/ : 52.0...60.0 **
1000 s: (-) 1st version Settina : 500 Speed rpm hPa : 1300 mm : 13.30...13.40 Pressure Rack travel mm Remarks: Measurement Speed 1/min: 500 * applies to cylinders 1, 2, 3, 7 and 9
** applies for cylinders 4, 5, 6, 8 and 10 1st pressure hPa : -Rack travel in m: 8.90...9.10 2nd pressure hPa : 500 **APPLICATION** Rack travel in m: 9.30...9.40 3rd pressure hPa : 1150 Rack travel in m: 11.80...12.20 Ship START CUT-OUT

Note remarks

: MB 18,3 L 2 : 07.02.89 Test sheet Edition

Replaces

Test oil : ISO-4113

Combination no. : 0 402 649 808

Injection pump

Pump designation : PE10P120A320LS7809-1

EP type number : 0 412 629 801

Governor

Governor design. : RQ300/1050PA762-6

: 0 421 801 471 Governer no.

Customer-spec. information

Customer : DAIMLER-BENZ

: 0M443 A Engine

: 331.0 1st version kW : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 130...150

Test nozzle holder

: 1 688 901 019 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter

x Wall thickness

: 6.00x1.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 4.00...4.10 : (3.95...4.15) Prestroke mm

Rack travel in mm : 20.00...21.00

: 10- 9- 4- 1- - 6- 3- 5-7 Firing order

Phasing : 0-45-72-117-144-189-

216-261-288-333

Tolerance + - 0 : 0.50 (0.75)

Time to cyl. no. : 10

BASIC SETTING

rpm: 1050 1st speed

Rack travel in mm : 13.30...13.40

Del.quantity cm3/: 18.5...18.7

100 s: (18.2...19.0)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 300.02nd speed

Rack travel in mm : 6.6...6.8 Del.quantity cm3/: 1.6...2.2

100 s: (1.3...2.5)

cm3 : 0.6Spread

100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position

Dearee: -2

rpm : 600 Speed

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1050 Speed Aneroid pressure h: 900

: 185.0...187.0 Del.quantity

1000 : (182.0...190.0)

: 5.00 cm3 Spread

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm: 20.0 Testing: 1st rack travel in: 12.30 rpm : 1090...1100 Speed 2nd rack travel in: 4.00 rpm : 1180...1210 Speed 4th rack travel in: 1250 Speed rpm : 0.00...1.50LOW IDLE 1 Setting point w/out bumper spring rpm : 300 Speed Rack travel in mm: 6.8 Testina: : 200 Speed rpm Minimum rack trave: 9.00 : 300 Speed rpm Rack travel in mm : 6.70...7.00 Rack travel in mm : 2.00 : 380...420 Speed rom TORQUE CONTROL Dimension a mm :? Torque control curve - 1st version 1st speed rpm : 1050 Rack travel in m: 13.30...13.40 2nd speed rpm : 750 Rack travel in m: 14.20...14.40 Aneroid/Altitude Compensator Test 1st version Setting : 500 Speed man hPa : -Pressure : 11.50...11.80 Rack travel mm Measurement 1/min : 500 Speed 1st pressure hPa : 300 Rack travel in m: 12.10...12.30 2nd pressure hPa : 550

Rack travel in m: 13.50...13.70

FUEL DELIVERY CHARACTERISTICS

Aneroid pressure h: 900

rom

1/min : 220 (240)

Del.quantity cm3/: 202.0...205.0 1000 s: (199.0...208.0) Spread cm3 : 8.00 1000 s: (12.0) Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/: 129.0...131.0 1000 s: (126.0...134.0) Spread cm3 : 8.00 1000 s: (-)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 12.30 Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 200.0...220.0 1000 s: (196.0...224.0)

Remarks:

:

L04

Speed

START CUT-OUT

1st version

Speed

Note remarks

Test sheet : MB 21,9 j 1 : 07.02.89 Edition

Replaces

Test oil : ISO-4113

Combination no. : 0 402 670 804

Injection pump

Pump designation : PE12P12OA32OLS7813-1

: 0 412 620 811 EP type number

Governor

: RSV350...750P0A825-5 Governor design.

: 0 421 833 277 Governer no.

Customer-spec. information

Customer : DAIMLER-BENZ

Engine : OM 444 LA

: 441.0 1st version kW : 1500 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 150...170

Test nozzle holder

: 1 688 901 019 assembly

Opening .

pressure, bar : 207...210

Orifice plate

diameter mm 8.0:

Test lines : 1 680 750 067

Outside diameter

x Wall thickness

x Length mm : 6.00X1.50X1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30

: (5.15...5.35)

Rack travel in mm : 19.00...21.00

Firing order : 12- 1- 5- 9- 8- 3- 4- 11- 10- 2- 6- 7

Phasing : 0-45-60-105-120-165-

180-225-240-285-300-

: 0.50 (0.75) Tolerance + - 0

Time to cyl. no. : 12

BASIC SETTING

rpm: 700 1st speed

Rack travel in mm : 15.90...16.00

Del.quantity cm3/: 26.7...26.9

100 s: (26.4...27.2)

cm3 : 0.5Spread

100 s: (0.9)

2nd speed rpm : 350.0 Rack travel in mm : 5.1...5.3 Del.quantity cm3/ : 1.4...2.0 100 s: (1.1...2.3)

cm3 : 0.8

100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position Degree: -3

rpm : 800

Rack travel in mm: 0.30...1.40

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Spread

Speed rpm : 700

Del.quantity 267.0...269.0 1000 : (264.0...272.0)

: 5.00 Spread cm3

1000 : (9.00)

RATED SPEED

1st version

Control lever

position degrees: 20...28

Testing:

1st rack travel in: 14.90 Speed rpm: 750...755 2nd rack travel in: 4.00 Speed rpm: 775...788 4th rack travel in: 900

rpm : 0.30...1.70Speed

LOW IDLE 1

Control Lever

position degrees: 9...17

Setting point w/out bumper spring

Speed rpm : 350
Rack travel in mm : 5.2
Speed rpm : 350
Rack travel in mm : 5.10...5.30

SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 13.10

rpm : 750...755 Speed

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 240.0...260.0

1000 s: (236.0...264.0)

Remarks:

Observe VDT-I-420/120

APPLICATION

Generator

Note remarks

Test sheet : MB 21,9 y 3 : 09.12.88 Edition Replaces : 8.6.88

Test oil : ISO-4113

: 0 402 670 806 Combination no.

Injection pump

Pump designation: PE12P12OA32OLS7807-2

EP type number : 0 412 620 812

Governor

Governor design: RSV350..1050P0A538

: 0 421 833 300 Governer no.

Customer-spec. information

: DAIMLER-BENZ Customer

: OM 444 A Engine

: 390.0 : 2100 1st version kW Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 150...170

Test nozzle holder

: 1 688 901 019 assembly

Opening |

: 207...210 pressure, bar

Orifice plate

diameter mm : 0.8

: 1 680 750 067 Test Lines

Outside diameter x Wall thickness

x Length mm : 6.00x1.50x1000

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.20...5.30 Prestroke mm

: (5.15...5.35)

Rack travel in mm : 9.00...12.00 : 12- 1- 5- 9- 8- 3-4- 11- 10- 2- 6- 7 Firing order

: 0-45-60-105-120-165-Phasing

180-225-240-285-300-

: 0.50 (0.75) Tolerance + - 0

Time to cyl. no. : 12

BASIC SETTING

rpm : 10301st speed

Rack travel in mm : 12.40...12.50

Del.guantity cm3/: 17.2...17.4

100 s: (16.9...17.7)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 350.0 Rack travel in mm : 5.7...6.0 Del.quantity cm3/ : 1.6...2.2

100 s: (1.3...2.5)

cm3 : 0.8Spread

100 s: (1.2)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1030 Aneroid pressure h: 900

Anerote p. Del.quantity 1000 : 172.0...174.0

: (169.0...177.0)

: 5.00 Spread cm3

1000 : (9.00)

RATED SPEED

1st version Control lever position degrees: 36...44 Testina: 1st rack travel in: 11.40 Speed rpm : 1070...1080 2nd rack travel in: 4.00 rpm : 1130...1160 Speed 4th rack travel in: 1400 rpm : 0.30...1.40Speed LOW IDLE 1 Control Lever position degrees: 13...21 Setting point w/out bumper spring rpm : 350 Speed Rack travel in mm : 5.8 Testing: : 100 Speed rpm Minimum rack trave: 9.50 : 350 Speed rpm Rack travel in mm : 5.70...6.00 SET IDLE AUXILIARY SPRING Rack travel in mm : 2.00 TORQUE CONTROL Torque control curve - 1st version rpm : 1030 1st speed Rack travel in m: 12.40...12.50 d speed rpm : 950 2nd speed Rack travel in m: 12.90...13.10 rpm : 875 3rd speed Rack travel in m: 13.40...13.60 : 750 4th speed rom Rack travel in m: 13.90...14.10 Aneroid/Altitude Compensator Test 1st version Setting : 500 Speed rpm hPa : -Pressure : 10.60...10.90 Rack travel mm Measurement 1/min: 500 Speed 1st pressure hPa : 300 Rack travel in m: 11.40...11.60 2nd pressure hPa : 500

Rack travel in m: 13.00...13.20

FUEL DELIVERY CHARACTERISTICS

1st version Aneroid pressure h: 900 Speed rom 700 Del.quantity cm3/: 206.0...210.0 1000 s: (203.0...213.0) cm3 : 8.00 1000 s: (12.0) Spread Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/ : 136.0...138.0 1000 s: (133.0...141.0) cm3 : 8.00Spread 1000 s: (12.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 11.40 rpm : 1070...1080 Speed STARTING FUEL DELIVERY

rpm

Speed

•

: 100

L08

Note remarks

: SCA 9,0 k : 10.02.89 Test sheet Edition

Replaces

Test oil : ISO-4113

Combination no. : 0 402 676 805

Injection pump

Pump designation : PE6P120A320RS7138

: 0 412 626 822 EP type number

Governor

Governor design. : RSV350...1100P1A512

: 0 421 833 196 Governer no.

Customer-spec. information

: SAAB-SCANIA Customer

Engine : DS9 52,53,54,55

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 015

Outside diameter

x Wall thickness

: 6.00x1.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 4.40...4.50 Prestroke mm

: (4.35...4.55)

Rack travel in mm : 9.00...12.00

L09

Firing order : 1-5-3-6-2-4

: 0-60-120-180-240-300 Phasing

Tolerance + - 0 : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 700

Rack travel in mm : 12.20...12.30

Del.quantity cm3/: 16.5...16.7

100 s: (16.2...17.0)

Spread cm3 : 0.6

100 s: (0.9)

2nd speed rpm : 350.0 Rack travel in mm : 4.5...4.9 Del.quantity cm3/ : 2.0...2.4

100 s: (-) cm3 : 0.3

Spread

100 s: (0.6)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 6.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

: 165.0...167.0 Del.quantity 1000 : (162.0...170.0)

: 6.00 Spread cm3

1000 : (9.00)

RATED SPEED

1st version

Control lever

position degrees: 62...70

Testing:

1st rack travel in: 11.20

rpm : 1140...1150 Speed

2nd rack travel in: 4.00

: 1200...1230 Speed rpm

4th rack travel in: 1350 Speed rpm : 0.30...1.40

LOW IDLE 1 Control lever

position degrees: 26..384

Setting point w/out bumper spring

rpm Rack travel in mm: 4.1

Testing:

Speed rpm : 100 Minimum rack trave: 19.50 rpm : 350

Rack travel in mm : 4.50...4.70

Rack travel in mm : 2.00 Speed : 445...505 rpm

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 1100 Del.quantity cm3/ : 163.0...171.0 1000 s: (161.0...173.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 11.20

rpm : 1140...1150 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 270.0...320.0 Rack travel in mm : 20.00...21.00

LOW IDLE

: 350 rpm

Rack travel in mm : 4.50...4.70

Remarks:

Delivery-valve spring pre-tension 3.2...3.4 mm. Permissible alteration of 3.0...3.5 mm

Because of flattening, set the spring preload on new delivery-valve holders to 2.9...3.1 mm.

Start-of-delivery setting with ROBO

L10

diaphragm.

ADDITIONAL INFORMATION

For comb. with letter index see VDT-I-400/116.

For sealing see VDT-I-400/117.

Test specifications approved by Scania on 1988-09-12

Start of delivery - engine: 13° before

Firing sequence of engine: 1-5-3-6-2-4.

Note remarks

: MB 14,7 g : 29.2.88 Test sheet Edition : 1.9.87 Replaces : ISO-4113 Test oil

Combination no. : 0 402 678 802

Injection pump

Pump designation : PE8F12OA320LS7801-1

EP type number : 0 412 628 818

Governor

Governor design. : RSV650...1050P0A826 Governor no. : 0 421 833 253

Customer-spec. information

Customer : DAIMLER-BENZ

Engine : 0M442A

: 234.0 1st version kW : 2100 Rated speed : 234.0 2nd version kW : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 019 assembly

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0.8

Test Lines : 1 680 750 067

Outside diameter

x Wall thickness

x Length mm : 6.00x1.50x1000 (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.20...5.30 Prestroke mm : (5.15...5.35)

Rack travel in mm : 9.00...12.00 : 8- 7- 2- 6- 3- 5-

Firing order

: 0-45-90-135-180-225-Phasing

270-315

: 0.50 (0.75) Tolerance + - 0

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 1080

Rack travel in mm : 11.60...11.70

Del.quantity cm3/: 16.3...16.5

100 s: (16.0...16.8)

cm3 : 0.5Spread

100 s: (0.9)

2nd speed rpm : 650.0 Rack travel in mm: 4.1...4.3 Del.quantity cm3/ : 1.6...2.2

100 s: (1.3...2.5)

cm3 : 0.8Spread

100 s: (1.2)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3 rpm : 800

Speed Rack travel in mm : 0.30...0.70

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1080 Speed

: 163.0...165.0 Del.quantity

1000 : (160.0...168.0)

: 5.00 Spread cm3 : (9.00) 1000

RATED SPEED

1st version Control lever

position degrees: 34...42

Testing:

1st rack travel in: 10.60

rpm : 1110...1120 Speed

2nd rack travel in: 4.00

rpm : 1135...1150 Speed

4th rack travel in: 1400

Speed rom : 0.30...1.40

LOW IDLE 1 Control lever

position degrees: 18...26

Setting point w/out bumper spring

Speed rpm : 650 Rack travel in mm : 4.2

Testing:

: 100 Speed rpm Minimum rack trave: 19.50 : 650 Speed rpm Rack travel in mm: 4.20 Rack travel in mm: 2.00 Speed : 650...710 rom

SET IDLE AUXILIARY SPRING rpm : 2.00 Speed

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1080
Rack travel in m: 11.60...11.70
2nd speed rpm : 900

Rack travel in m: 13.20...13.40

3rd speed rpm : 1000

Rack travel in m: 12.40...12.60

FLEL DELIVERY CHARACTERISTICS

1st version

: 900 Speed rpm

Del.quantity cm3/: 202.0...206.0 1000 s: (199.0...209.0)

Spread

cm3 : 8.0 1000 s: (12.0)

BREAKAWAY

1st version 1mm rack travel less than

full Load rack tr: 10.60

Speed : 1110...1120 rpm

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 200.0...220.0 1000 s: (196.0...224.0)

Engine-speed difference between 1 mm regulated and control-rod travel 4 mm = 25...35 1/min.

In order to adjust and test the EP combination, set full-load speed regul. at 1110...1120 1/min. Then set speed regul. to 1060...1070 1/min again.

Note remarks

: MB 14,7 g 1 : 28.11.88 Test sheet Edition : 2.11.87 Replaces : ISO-4113 Test oil

: 0 402 678 803 Combination no.

Injection pump

Pump designation : PE8P120A320LS7801-1

EP type number : 0 412 628 818

Governor

Governor design. : RSV350...750P0A825-3

Governer no. : 0 421 833 260

Customer-spec, information

Customer : DAIMLER-BENZ

: 0M442A Engine

: 240.0 1st version kW : 1500 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 019 assembly

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter

x Wall thickness

: 6.00x1.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.20...5.30 Prestroke mm

: (4.15...5.35)

Rack travel in mm : 9.00...12.00 Firing order : 8-7-2-6-3-5-

Phasina : 0-45-90-135-180-225-

270-315

Tolerance + - 0 : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

rpm: 700 1st speed

Rack travel in mm : 15.10...15.20

Del.quantity cm3/: 23.3...23.5

100 s: (23.0...23.8)

cm3 : 0.5Spread

100 s: (0.9)

2nd speed rpm : 350.0 Rack travel in mm : 5.2...5.4 Del.quantity cm3/ : 1.6...2.2 100 s: (1.3...2.5) Spread cm3 : 0.8

100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position Degree: -3

rpm : 800 Speed

Rack travel in mm: 0.30...0.70

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 700 Speed

: 233.0...235.0 Del.quantity

1000 : (230.0...238.0)

: 5.00 Spread cm3

1000 : (9.00)

RATED SPEED

1st version

Control lever

position degrees: 24...32

Testing:

1st rack travel in: 14.10 rpm : 750...755 Speed 2nd rack travel in: 4.00 : 775...788 Speed rpm 4th rack travel in: 900 rpm : 0.30...1.40 Speed LOW IDLE 1 Control lever position degrees: 10...18 Setting point w/out bumper spring Speed rpm : 350 Rack travel in mm : 5.3 Testing: Speed : 100 man Minimum rack trave: 15.00 : 350 rpm Rack travel in mm : 5.20...5.40 Rack travel in mm : 2.00 rpm : 350...410 Speed SET IDLE AUXILIARY SPRING Rack travel in mm : 2.00 TORQUE CONTROL : 900 2nd speed rpm Rack travel in m: 13.20...13.40 3rd speed rpm : 1000 Rack travel in m: 12.40...12.60 FUEL DELIVERY CHARACTERISTICS 1st version Speed rpm : 600
Del.quantity cm3/: 233.0...239.0
1000 s: (230.0...242.0) Spread cm3 : 8.00 1000 s: (12.0) STARTING FUEL DELIVERY rpm : 100 Speed Del.quantity cm3/: 230.0...250.0 1000 s: (226.0...254.0) Remarks: APPLICATION Generator

Note remarks

Test sheet : SCA 14,2 c2 : 07.02.89 Edition Replaces

Test oil : ISO-4113

Combination no. : 0 402 678 807

Injection pump

Pump designation : PE8P120A920/4LS7002

EP type number : 0 412 628 800

Governor

Governor design. : RSV350...1000P1/484-

: D 421 833 278 Governer no.

Customer-spec. information

Customer : SAAB-SCANIA

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0.8

Test lines : 1 680 750 015

Outside diameter

x Wall thickness

: 6.00x1,50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.00...5.10 : (4.95...5.15) Prestroke mm

Rack travel in mm : 9.00...12.00

: 1- 2- 7- 3- 4- 5-Firing order

L15

: 0-45-90-135-180-225-Phasing

270-315 Tolerance + - 0 : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 700

Rack travel in mm : 13.20...13.30

Del.quantity cm3/: 18.7...18.9

100 s: (18.4...19.2)

cm3 : 0.6 Spread

100 s: (0.9)

2nd speed rpm : 350.0 Rack travel in mm : 4.7...5.2

Del.quantity cm3/: 1.4...1.8

100 s: (-)

cm3 : 0.3Spread 100 s: (0.6)

GUIDE SLEEVE POSITION

Control-lever position Degree: -3

rpm : 800 Speed

Rack travel in mm: 0.30...1.00

Governor spring pre-tension

Click setting x : 5.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

: 187.0...189.0 Del.quantity

1000 : (184.0...192.0)

: 6.00 Spread cm3

1000 : (9.00)

RATED SPEED

1st version

Control lever

position degrees: 55...63

Testing:

1st rack travel in: 12.20

rpm : 1040...1050 Speed

2nd rack travel in: 4.00

rpm : 1110...1140 Speed

4th rack travel in: 1300

rpm : 0.30...1.70 Speed

LOW IDLE 1 Control Lever

position degrees: 25...33
Setting point w/out bumper spring

Speed rpm : 350 Rack travel in mm : 4.3

Testing:

rpm : 100 Speed Minimum rack trave: 19.50 rpm : 350 Speed

Rack travel in mm : 4.70...4.90

Rack travel in mm : 2.00 rpm : 440...500 Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 1000 Del.quantity cm3/ : 184.0...192.0 1000 s: (182.0...194.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 12.20

rpm : 1040...1050 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 240.0...290.0 Rack travel in mm : 20.00...21.00

LOW IDLE

: 350 rpm

Rack travel in mm : 4.70...4.90

Remarks:

: DS14 06,07 : DS14 40,42 : DSI14 40,41

Delivery-valve spring pre-tension 3.2...3.4 mm.

Permissible alteration of 3.0...3.5 mm

Because of flattening, set the spring preload on new delivery-valve holders to 2.9...3.1 mm.

Start-of-delivery setting with ROBO diaphragm.

ADDITIONAL INFORMATION

For comb. with letter index see VDT-I-400/116.

For sealing see VDT-I-400/117.

Test specifications approved by Scania on 1988-09-21

Start of delivery - engine: DS 14 - 18° before TDC DSI 14 - 17° before TDC

Engine firing sequence: 1-5-4-2-6-3-7-8

Note remarks

: SCA 14,0 i Test sheet : 07.02.89 Edition

Replaces Test oil : ISO-4113

Combination no. : 0 402 678 811

Injection pump

Pump designation: PE8P12OA92O/4LS7125

EP type number : 0 412 628 833

Governor

Governor design. : RSV350...1050P1A512-

: 0 421 833 306 Governer no.

Customer-spec. information

: SAAB-SCANIA Customer

: DS 14 Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 015

Outside diameter x Wall thickness

: 6.00X1.50X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY Test pressure, bar: 25...27

: 5.00...5.10 Prestroke mm

: (4.95...5.15)

Rack travel in mm : 9.00...12.00 Firing order : 1-2-7-3-4-5-

: 0-45-90-135-180-225-Phasing

270-315

Tolerance + - 0 : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 700

Rack travel in mm : 13.50...13.60

Del.quantity cm3/: 21.4...21.6

100 s: (21.1...21.9)

Spread cm3 : 0.6

100 s: (0.9)

rpm : 350.0 2nd speed Rack travel in mm : 4.6...5.0

Del.quantity cm3/: 1.5...1.9

100 s: (-)

cm3 : 0.3Spread 100 s: (0.6)

GUIDE SLEEVE POSITION Control-Lever position

Degree: -3

Speed rpm: 800 Rack travel in mm: 0.30...0.70

Governor spring pre-tension

Click setting x : 2.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

: 214.0...216.0 Del.quantity

1000 : (211.0...219.0)

: 6.00 Spread cm3 1000 : (9.00)

RATED SPEED

1st version Control lever

position degrees: 44...52

Testing:

1st rack travel in: 12.50

Speed rpm : 1090...1100

L17

2nd rack travel in: 4.00

Speed rpm: 1115...1145 4th rack travel in: 1280 Speed rpm: 0.30...1.40

LOW IDLE 1 Control Lever

position degrees: 14...22

Setting point w/out bumper spring

rpm : 350 Rack travel in mm : 4.2

Testing:

rpm : 100 Speed Minimum rack trave: 19.50 : 350 Speed rpm

Rack travel in mm : 4.60...4.80 Rack travel in mm : 2.00

rpm : 430...490 Speed

FUEL DELIVERY CHARACTERISTICS

1st version

: 950 Speed rpm

Del.quantity cm3/: 203.0...211.0 1000 s: (201.0...213.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 12.50

rpm : 1090...1100 Speed

STARTING FUEL DELIVERY

: 100 Speed rpm

Del.quantity cm3/: 240.0...290.0 1000 s: (-) Rack travel in mm: 20.00...21.00

LOW IDLE

rpm Speed : 350

Rack travel in mm : 4.60...4.80

Remarks:

Delivery-valve spring pre-tension 3.2...3.4 mm.

Permissible alteration of 3.0...3.5 mm

Because of flattening, set the spring preload on new delivery-valve holders to 2.9...3.1 mm.

Start-of-delivery setting with ROBO diaphragm.

ADDITIONAL INFORMATION

For comb. with letter index see VDT-I-400/116.

For sealing see VDT-I-400/117.

Test specifications approved by Scania

on November 28, 1988

Engine firing sequence: 1-5-4-2-6-3-7-8

Note remarks

Test sheet : MAC 11,1a11 : 10.02.89 Edition

Replaces

Test oil : ISO-4113

: 0 402 736 800 Combination no.

Injection pump

Pump designation : PES6P120A720/3RS7135

EP type number : 0 412 726 818

Governor

: RQV325..1050PA848-Governor design.

: 0 421 815 203 Governer no.

Customer-spec. information : MACK Customer

: EM6 300 2VH Engine

: 224.0 1st version kW Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 2 417 413 011

Inlet press., bar: 1.50

Test nozzle holder

: 9 688 901 101 assembly

Openina

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

: 1 680 750 008 Test lines

Outside diameter

x Wall thickness

x Length mm : 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 17...19

: 2.75...2.85 : (2.70...2.90) Prestroke mm

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

Phasing : 0-60-120-180-240-300

Phasing Tolerance + - 0 : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1050

Rack travel in mm : 12.90...13.00

Del.quantity cm3/: 19.9...20.1

100 s: (19.6...20.4)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 325.0 2nd speed

Rack travel in mm : 4.8...5.0 Del.quantity cm3/: 3.8...4.4

100 s: (3.6...4.6)

Spread cm3 : 0.8100 s: (1.2)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 325

: 1.40...1.60 travel mm rpm : 450

2nd speed : 2.50...2.80 travel mm

rpm : 800 3rd speed

: 4.80...5.00 travel mm rpm : 1050 4th speed

: 7.30...7.60 travel mm

rpm : 1200 5th speed

travel mm : 9.40...9.60

GUIDE SLEEVE POSITION Control-lever position

Degree: -1 rpm : 1200 Speed

Rack travel in mm : 7.00...13.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1050 Speed Aneroid pressure h: 900 : 199.0...201.0 Del.quantity 1000 : (196.0...204.0) : 5.00 cm3 Spread : (9.00) 1000 RATED SPEED 1st version Control Lever position degrees: 56...64 Testing: 1st rack travel in: 11.90 rpm : 1090...1100 Speed 2nd rack travel in: 4.00 rpm : 1170...1200 Speed 4th rack travel in: 1300 rpm : 0.00...1.00 Speed LOW IDLE 1 Control lever position degrees: 10...18 Testing: : 275 Speed rpm Minimum rack trave: 6.30 : 325 Speed rpm Rack travel in mm : 4.80...5.00 CONSTANT REGULATION rpm : 325...600 Speed TORQUE CONTROL Torque control curve - 1st version t speed rpm : 1050
Rack travel in m: 12.90...13.00 1st speed nd speed rpm : 630 Rack travel in m: 13.00...13.10 2nd speed rpm : 500 3rd speed Rack travel in m: 0.00...12.60 Aneroid/Altitude Compensator Test 1st version Setting : 630 Speed rpm hPa : 900 Pressure Rack travel mm : 13.00...13.10 Measurement 1/min: 630 Speed 1st pressure hPa : -

Rack travel in m: 7.80...8.20 2nd pressure hPa : 190 Rack travel in m: 9.10...9.20

3rd pressure hPa : 410 Rack travel in m: 11.40...11.80 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 900 Speed rpm : 630
Del.quantity cm3/ : 213.0...219.0
1000 s: (210.0...222.0) Spread cm3 : 8.00 1000 s: (12.0) Aneroid pressure h: -Speed rpm : 400 Del.quantity cm3/ : 121.0...125.0 1000 s: (119.0...127.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 11.90 rpm : 1090...1100 Speed STARTING FUEL DELIVERY Speed rpm Del.quantity cm3/: 110.0...150.0 1000 s: (100.0...160.0) Rack travel in mm: 7.80...8.20 LOW IDLE rpm : 325 Speed Rack travel in mm : 4.80...5.00 Del.quantity cm3/: 38.0...44.0 1000 s: (36.0...46.0) Spread cm3 : 8.001000 s: (12.00) Remarks: Delivery-valve spring pre-tension 3.0...3.2 mm. **APPLICATION Omnibus**

Note remarks

Test sheet : MB 10,0 o : 03.03.89 Edition

Replaces

: ISO-4113 Test oil

: 0 402 745 806 Combination no.

Injection pump

Pump designation : PES5P120A720LS7163

: 0 412 725 803 EP type number

Governor

Governor design: : RQ300/1050PA774-4

: 0 421 801 453 Governer no.

Customer-spec. information

: DAIMLER-BENZ Customer

: 0M429 LA Engine

1st version kW : 221.0 : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 019 assembly

Opening |

: 207...210 pressure, bar

Orifice plate

: 0,8 diameter mm

Test lines : 1 680 750 067

Outside diameter x Wall thickness

x Length mm : 6.00x1.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm

: 5.20...5.30 : (5.15...5.35)

Rack travel in mm : 20.00...21.00

: 1-3-5-4-2 Firing order

: 0-72-144-216-288 Phasing

Tolerance $+ - \circ : 0.50 (0.75)$

Time to cyl. no. : 5

BASIC SETTING

1st speed rpm: 600

Rack travel in mm : 13.60...13.80

Del.quantity cm3/: 23.5...23.7

100 s: (23.2...24.0)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 300.0 2nd speed Rack travel in mm : 5.6...5.9

Del.quantity cm3/: 1.6...2.2 100 s: (1.3...2.5)

cm3 : 0.8 Spread 100 s: (1.2)

GUIDE SLEEVE POSITION Control-lever position

> Degree: -2 rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 800 : 235.0...237.0 Del.quantity

1000 : (232.0...240.0)

: 5.00 cm3 Spread

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed : 600 rpm Rack travel in mm : 20.0

Testing: 1st rack travel in: 12.00 Speed rpm : 1095...1110 2nd rack travel in: 4.00 rpm : 1160...1190 Speed 4th rack travel in: 1300 Speed rpm : 0.00...1.50LOW IDLE 1 Setting point w/out bumper spring rpm Rack travel in mm: 5.7 Testing: Speed rpm : 200 Minimum rack trave: 7.60 Speed rpm : 300
Rack travel in mm : 5.60...5.90
Rack travel in mm : 2.00 : 370...410 Speed rpm TORQUE CONTROL Dimension a mm Torque control curve - 1st version rpm : 1050 1st speed Rack travel in m: 13.00...13.20 rpm : 750 2nd speed Rack travel in m: 14.40...14.60 Aneroid/Altitude Compensator Test 1st version Setting : 600 Speed rpm hPa : 800 Pressure : 13.60...13.80 Rack travel mm Measurement 1/min : 600 Speed 1st pressure hPa : 200 Rack travel in m: 11.00...11.20 2nd pressure hPa : 450
Rack travel in m: 13.00...13.20
3rd pressure hPa : 1000
Rack travel in m: 13.70...13.80
4th pressure hPa : 1400 Rack travel in m: 14.40...14.60 5th pressure hPa : -Rack travel in m: 10.00...10.40 START CUT-OUT 1/min : 220 (240) Speed

FUEL DELIVERY CHARACTERISTICS

1st version Aneroid pressure h: 1400 : 1050 rpm Del.quantity cm3/: 228.0...231.0 1000 s: (225.0...234.0) cm3 : 8.00 1000 s: (12.0) Spread Aneroid pressure h: 1400 Speed : 750 rpm Del.quantity cm3/: 250.0...254.0 1000 s: (247.0...257.0) Spread cm3 : 8.00 1000 s: (12.0) : 500 Speed rpm Del.quantity cm3/: 146.0...148.0 1000 s: (143.0...151.0) : 8.00 Spread cm3 1000 s: (12.00

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 12.00 Speed rpm : 1095...1110

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 220.0...240.0 1000 s: (216.0...244.0)

Remarks:

* Increase in control-rod travel with respect to setting at least 0.1 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : MAC 11,1 a : 07.02.89 : 7.10.88 Edition Replaces : ISO-4113 Test oil Combination no. : 0 402 746 810 Injection pump Pump designation : PES6P12DA72ORS7135 : 0 412 726 807 EP type number Governor Governor design. : RQV325...900PA848K : 0 421 815 168 Governer no. Customer-spec. information Customer : MACK : E6-350 4VH Engine : 261.0 1st version kW : 1800 Rated speed TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 2 417 413 011 Inlet press., bar: 1.50 Test nozzle holder assembly : 1 688 901 101 Opening : 207...210 pressure, bar Orifice plate diameter mm : 0,6 Test Lines : 1 680 750 008 Outside diameter x Wall thickness x Length mm : 6.00X2.00X600 (A) Injection pump setting values

> Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 17...19

: (2.70...2.90)
Rack travel in mm : 9.00...12.00 : 1-5-3-6-2-4 Firing order : 0-60-120-180-240-300 Phasing Tolerance + - 0 : 0.50 (0.75) Time to cyl. no. : 1 BASIC SETTING 1st speed rpm: 900 Rack travel in mm : 13.90...14.00 Del.guantity cm3/: 23.6...23.8 100 s: (23.3...24.1) cm3 : 0.5Spread 100 s: (0.9) rpm : 325.0 2nd speed Rack travel in mm: 4.0...4.2 Del.quantity cm3/: 3.2...3.8 100 s: (3.0...4.0) cm3 : 0.8 Spread 100 s: (1.2) (B) Setting of injection pump with governor GUIDE SLEEVE TRAVEL rpm : 325 1st speed : 1.20...1.40 travel mm 2nd speed : 450 rpm travel mm 3.10...3.30 : 850 3rd speed rpm 5.90...6.10 travel mm : 1000 4th speed rpm : 7.50...7.70 travel mm GUIDE SLEEVE POSITION Control-lever position Degree: -1 rpm : 1130 Speed Rack travel in mm : 7.00...13.00 FILL LOAD DELIV. AT FULL LOAD STOP 1st version rpm : 900 Speed Aneroid pressure h: 900 Del.quantity : 236.5...238.5 1000 : (233.5...241.5)

: 2.75...2.85

Prestroke mm

cm3 : 5.00 1000 : (9.00) Spread RATED SPEED 1st version Control lever position degrees: 53...61 Testing: 1st rack travel in: 12.90 Speed rpm : 950...960 2nd rack travel in: 4.00 rpm : 1075...1105 Speed 4th rack travel in: 1250 rpm : 0.00...1.00Speed LOW IDLE 1 Control lever position degrees: 7...15 Testing: Speed rpm : 275 Minimum rack trave: 5.50 : 325 rom Rack travel in mm : 4.00...4.20 CONSTANT REGULATION rpm : 325...520 Speed TORQUE CONTROL Dimension a mm Torque control curve - 1st version rpm : 900 1st speed Rack travel in m: 13.90...14.00 2nd speed rpm : 625 Rack travel in m: 14.10...14.20 3rd speed rpm : 800 Rack travel in m: 14.00...14.10 4th speed rpm : 500 Rack travel in m: 0.00...13.50 Aneroid/Altitude Compensator Test 1st version Setting rpm : 625 hPa : 900 Speed mar Pressure : 14.10...14.20 Rack travel mm

1/min: 625

Rack travel in m: 8.50...8.90 2nd pressure hPa : 275 Rack travel in m: 10.00...10.10

FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 900 Aneroid pressure h: -Speed rpm : 400 Del.quantity cm3/: 142.0...146.0 1000 s: (140.0...148.0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 12.90 rpm : 950...960 Speed STARTING FUEL DELIVERY LOW IDLE rpm : 325 Speed Rack travel in mm : 4.00...4.20 Del.quantity cm3/: 32.0...38.0 1000 s: (30.0...40.0) Spread cm3 : 8.00 1000 s: (12.00) Remarks: Delivery-valve spring pre-tension 3.0...3.2 mm.

Rack travel in m: 12.30...12.70

Measurement

1st pressure hPa : -

3rd pressure hPa : 570

Speed

Note remarks

: MAC 11,1 a1 : 07.02.89 Test sheet Edition Replaces : 8.4.88 Test oil : ISO-4113

: 0 402 746 814 Combination no.

Injection pump

Pump designation : PES6P120A720RS7135

EP type number : 0 412 726 807

Governor

Governor design. : RQV325...850PA848-1K

: 0 421 815 169 Governer no.

Customer-spec. information Customer : MACK

: E6-300 4VH Engine

1st version kW : 224.0 : 1900 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 2 417 413 011

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 101 assembly

Openina

: 207...210 pressure, bar

Orifice plate

: 0,6 diameter mm

Test lines : 1 680 750 008

Outside diameter x Wall thickness

x Length mm : 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 17...19

Prestroke mm : 2.75...2.85

(2.70...2.90)

Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - 0 : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 850

Rack travel in mm : 12.90...13.00

Del.quantity cm3/: 20.0...20.2

100 s: (19.7...20.5)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 325.0 2nd speed Rack travel in mm : 4.5...4.7 Del.quantity cm3/ : 3.2...3.8

100 s: (3.0...4.0) cm3 : 0.8Spread

100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 325

: 1.20...1.40 travel mm

2nd speed rpm : 450

travel mm : 2.80...3.10

3rd speed : 850 rpm

: 6.20...6.40 travel mm

1000 4th speed rpm : 7.70...7.90 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1100 Speed

Rack travel in mm : 7.00...13.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 850 Speed

Aneroid pressure h: 900

Del.quantity : 200.5...205.5)

: 5.00 Spread cm3 1000 : (9.00) RATED SPEED 1st version Control lever position degrees: 52...60 Testing: 1st rack travel in: 11.90 Speed rpm : 900...910 2nd rack travel in: 4.00 rpm : 1025...1055 Speed 4th rack travel in: 1100 rpm : 0.00...1.00 Speed LOW IDLE 1 Control lever position degrees: 7...15 Testing: : 275 Speed rom Minimum rack trave: 6.00 Speed rpm : 325 Rack travel in mm : 4.50...4.70 CONSTANT REGULATION rpm : 325...520 Speed TORQUE CONTROL Dimension a mm Torque control curve - 1st version rpm : 850 1st speed Rack travel in m: 12.90...13.00

2nd speed rpm : 700

Rack travel in m: 13.30...13.50

3rd speed rpm : 600

Rack travel in m: 13.50...13.70

4th speed rpm : 500

Rack travel in m: 0.00...13.10 Aneroid/Altitude Compensator Test 1st version Setting : 600 Speed mar hPa : 900 Pressure : 13.50...13.70 Rack travel mm Measurement 1/min: 600 Speed 1st pressure hPa : -Rack travel in m: 9.90...10.30 2nd pressure hPa : 250 Rack travel in m: 10.90...11.00 3rd pressure hPa : 475

Rack travel in m: 12.60...13.00 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 900 : 700 Speed rpm Del.quantity cm3/: 217.0...223.0 1000 s: (214.0...226.0) Aneroid pressure h: 900 Speed rpm : 600 Del.quantity cm3/ : 233.0...239.0 1000 s: (230.0...242.0) Spread cm3 : 8.00 1000 s: (12.0) Aneroid pressure h: -Speed rpm : 400 Del.quantity cm3/: 154.0...158.0 1000 s: (152.0...160.0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 11.90 rpm : 900...910 Speed STARTING FUEL DELIVERY Speed : 100 rpm Del.quantity cm3/: 195.0...235.0 1000 s: (185.0...245.0) Rack travel in mm: 9.90...10.30 LOW IDLE Speed rpm : 325 Rack travel in mm : 4.50...4.70 Del.quantity cm3/: 32.0...38.0 1000 s: (30.0...40.0) cm3 : 8.00 Spread 1000 s: (12.00) Remarks: Delivery-valve spring pre-tension 3.0...3.2 mm.

Note remarks

: MAC 11,1 a2 : 07.02.89 : 7.10.88 Test sheet Edition Replaces : ISO-4113 Test oil

: 0 402 746 815 Combination no.

Injection pump

Pump designation : PES6P120A720RS7135

: 0 412 726 807 EP type number

Governor

Governor design. : RQV325...850PA848-2K

: 0 421 815 170 Governer no.

Customer-spec. information : MACK Customer

: E6-275 4VH Engine

: 202.0 1st version kW : 1900 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 2 417 413 011

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 101 assembly

Openina

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 17...19

: 2.75...2.85 Prestroke mm

: (2.70...2.90)

Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4

: 0-60-120-180-240-300 Phasing

Tolerance + - 0 : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

rpm: 850 1st speed

Rack travel in mm : 12.00...12.10

Del.guantity cm3/: 18.1...18.3

100 s: (17.8...18.6)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 325.0 2nd speed Rack travel in mm: 4.5...4.7 Del.quantity cm3/: 3.2...3.8

100 s: (3.0...4.0)

Spread cm3 : 0.8100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed

rpm : 325 : 1.20...1.40 travel mm

: 450 2nd speed rpm

: 2.80...3.10 travel mm

: 850 3rd speed rpm

: 6.20...6.40 travel mm

: 1000 4th speed man

: 7.70...7.90 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

Speed rpm: 1110
Rack travel in mm: 7.00...13.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 850 Aneroid pressure h: 900

Del.quantity : 181.0...186.0)

: 5.00 Spread cm3

1000 : (9.00)

RATED SPEED

1st version Control lever

position degrees: 52...60

Testing:

1st rack travel in: 11.00 rpm : 900...910 Speed 2nd rack travel in: 4.00

rom : 1025...1055 Speed

4th rack travel in: 1150

Speed rpm : 0.00...1.00

LOW IDLE 1 Control lever

position degrees: 7...15

Testing:

Speed rpm : 275 Minimum rack trave: 6.00 : 325 rom

Rack travel in mm : 4.50...4.70

CONSTANT REGULATION

Speed rpm : 325...520

TORQUE CONTROL

Dimension a mm

Torque control curve - 1st version

1st speed rpm : 850

Rack travel in m: 12.00...12.10

2nd speed rpm : 600

Rack travel in m: 12.60...12.70

3rd speed rpm : 700

Rack travel in m: 12.50...12.70

4th speed rpm : 500

Rack travel in m: 0.00...12.40

Aneroid/Altitude Compensator Test

1st version

Setting

: 600 Speed rpm hPa : 900 Pressure

: 12.60...12.70 Rack travel mm

Measurement

1/min: 600 Speed

1st pressure hPa : -

Rack travel in m: 9.50...9.90

2nd pressure hPa : 215

Rack travel in m: 10.30...10.40 3rd pressure hPa : 360

Rack travel in m: 11.50...11.90

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900

Speed rpm : 600 Del.quantity cm3/ : 210.5...216.5 1000 s: (207.5...219.5)

cm3 : 8.00 1000 s: (12.0) Spread

Aneroid pressure h: -

rpm : 400 Speed

Del.quantity cm3/: 144.0...148.0 1000 s: (142.0...150.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 11.00

rpm : 900...910 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 160.0...200.0 1000 s: (150.0...210.0)

Rack travel in mm : 9.50...9.90

LOW IDLE

rpm : 325

Rack travel in mm : 4.50...4.70 Del.quantity cm3/: 32.0...38.0 1000 s: (30.0...40.0)

cm3 : 8.00 Spread

1000 s: (12.00)

Remarks:

Delivery-valve spring pre-tension

3.0...3.2 mm.

Note remarks

: MAC 11,1 a3 : 07.02.89 Test sheet Edition : 7.10.88 Replaces Test oil : ISO-4113

Combination no. : 0 402 746 816

Injection pump

Pump designation : PES6P120A720RS7135

EP type number : 0 412 726 807

Governor

Governor design.: RQV325...875PA848-3K

: 0 421 815 171 Governer no.

Customer-spec. information : MACK Customer

: EM6-250L 4VH Engine

: 186.0 1st version kW : 1950 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 2 417 413 011

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 101 assembly

Openi/la

pressure, bar : 207...210

Orifice plate

diameter mm : 0,6

Test Lines : 1 680 750 008

Outside diameter x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ___

BEGINNING OF DELIVERY

Test pressure, bar: 17...19

Prestroke mm : 2.75...2.85 : (2.70...2.90) Rack travel in mm : 9.00...12.00

: 1-5- 3- 6- 2- 4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - 0 : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 875

Rack travel in mm : 10.80...10.90

Del.quantity cm3/: 16.3...16.5

100 s: (16.0...16.8)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 325.0 2nd speed

Rack travel in mm : 4.5...4.7 Del.quantity cm3/: 3.9...4.5

100 s: (3.7...4.7)

cm3 : 0.8 Spread

100 s: (1.2)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

rpm : 325 : 1.20...1.40 1st speed travel mm

rpm : 450 2nd speed

: 2.80...3.20 travel mm

rpm : 850 3rd speed

travel mm : 6.20...6.40

4th speed rpm : 1000

: 7.70...7.90 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1
Speed rpm : 1100
Rack travel in mm : 7.00...13.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 875 Speed

Aneroid pressure h: 1200 Del.quantity : 163.0...165.0 Del.quantity : 103.u...168.0)

cm3 : 5.00 1000 : (9.00) Spread cm3 RATED SPEED 1st version Control lever position degrees: 52...60 Testing: 1st rack travel in: 9.80 Speed rpm : 925...935 2nd rack travel in: 4.00 rpm : 1010...1040 Speed 4th rack travel in: 1100 Speed rpm : 0.00...1.00LOW IDLE 1 Control lever position degrees: 9...17 Testing: Speed : 275 rpm Minimum rack trave: 6.00 : 325 Speed rpm Rack travel in mm : 4.50...4.70 CONSTANT REGULATION rpm : 325...520 Speed TORQUE CONTROL Dimension a mm Torque control curve - 1st version 1st speed rpm : 875 Rack travel in m: 10.80...10.90 2nd speed rpm : 510
Rack travel in m: 13.00...13.20
3rd speed rpm : 700
Rack travel in m: 11.60...11.80
4th speed rpm : 550
Rack travel in m: 0.00...13.10 Aneroid/Altitude Compensator Test 1st version Setting rpm : 510 hPa : 1200 mm : 13.00...13.20 Speed man Pressure Rack travel mm Measurement 1/min: 510 Speed 1st pressure hPa : Rack travel in m: 8.60...9.00
2nd pressure hPa : 215
Rack travel in m: 10.30...10.40
3rd pressure hPa : 435

FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1200 Speed rpm : 510 Del.quantity cm3/: 240.0...246.0 1000 s: (237.0...249.0) cm3 : 8.00 1000 s: (12.0) Spread Aneroid pressure h: -: 400 Speed rpm Del.quantity cm3/: 146.0...150.0 1000 s: (144.0...152.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 9.80 rpm : 925...935 Speed STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/ : 145.0...185.0 1000 s: (135.0...195.0) Rack travel in mm : 8.60...9.00 LOW IDLE rpm : 325 Rack travel in mm : 4.50...4.70 Del.quantity cm3/: 39.0...45.0 1000 s: (37.0...47.0) Spread cm3 : 8.00 1000 s: (12.00) Remarks: Delivery-valve spring pre-tension 3.0...3.2 mm.

Rack travel in m: 12.20...12.60

Note remarks

Test sheet : MAC 11,1 a4 Edition : 07.02.89 : 7.10.88 Replaces Test oil : ISO-4113

Combination no. : 0 402 746 817

Injection pump

Pump designation : PES6P120A720RS7135

: 0 412 726 807 EP type number

Governor

Governor design. : RQV325...900PA848-4K

: 0 421 815 173 Governer no.

Customer-spec, information Customer : MACK

: EC6-350 4VH Engine

: 261.0 1st version kW : 1900 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 2 417 413 011

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 101 assembly

Openina

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

: 1 680 750 008 Test lines

Outside diameter x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY Test pressure, bar: 17...19

: 2.75...2.85 : (2.70...2.90) Prestroke mm

Rack travel in mm : 9.00...12.00

: 1-5- 3- 6- 2- 4 Firing order

Phasing : 0-60-120-180-240-300

Tolerance + - 0 : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

rpm: 900 1st speed

Rack travel in mm : 14.60...14.70

Del.quantity cm3/: 24.1...24.3

100 s: (23.8...24.6)

cm3 : 0.5Spread

100 s: (0.9)

2nd speed rpm : 325.0 Rack travel in mm : 4.9...5.1 Del.quantity cm3/: 3.9...4.5 100 s: (3.7...4.7)

cm3 : 0.8 Spread 100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed

rpm : 325 : 1.20...1.40 travel mm

rpm : 450 2nd speed

: 3.10...3.30 travel mm

rpm : 850 3rd speed

: 5.90...6.10 travel mm

: 1000 4th speed rom

: 7.50...7.70 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1 Speed rpm : 1130 Rack travel in mm : 7.00...13.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 900 Aneroid pressure h: 1200

Del.quantity : 241.5...243.5 1000 : (238.5...246.5)

cm3 : 5.00 Spread

1000 : (9.00)

RATED SPEED

1st version Control Lever

position degrees: 53...61

Testing:

1st rack travel in: 13.60 Speed rpm : 950...960 2nd rack travel in: 4.00

rpm : 1090...1120 Speed

4th rack travel in: 1200

rpm : 0.00...1.00Speed

LOW TDLE 1 Control Lever

position degrees: 7...15

Testing:

: 275 Speed rpm Minimum rack trave: 6.44 : 325 Speed rpm

Rack travel in mm : 4.90...5.10

CONSTANT REGULATION

rpm : 325...520 Speed

TORQUE CONTROL

Dimension a mm

Torque control curve - 1st version rpm : 900

1st speed

Rack travel in m: 14.60...14.70

: 625 2nd speed rpm

Rack travel in m: 14.90...15.10

rpm : 800 3rd speed

Rack travel in m: 14.70...14.80

4th speed rpm : 500

Rack travel in m: 0.00...14.50

Aneroid/Altitude Compensator Test

1st version

Setting

: 625 Speed rpm hPa : 1200 Pressure

Rack travel mm : 14.90...15.10

Measurement

1/min: 625 Speed

1st pressure hPa : -

Rack travel in m: 8.10...8.50

2nd pressure hPa : 280 Rack travel in m: 10.40...10.50

3rd pressure hPa : 650

Rack travel in m: 13.30...13.70

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200

: 625 Speed rpm

Del.quantity cm3/: 265.0...271.0 1000 s: (262.0...274.0)

cm3 : 8.00 1000 s: (12.0) Spread

Aneroid pressure h: -: 400 Speed rom

Del.quantity cm3/: 130.5...134.5

1000 s: (128.5...136.5)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 13.60

rpm : 950...960 Speed

STARTING FUEL DELIVERY

Speed : 100 rom

Del.quantity cm3/: 120.0...160.0 1000 s: (110.0...170.0)

Rack travel in mm : 8.10...8.50

LOW IDLE

rpm : 325 Speed

Rack travel in mm : 4.90...5.10 Del.quantity cm3/: 39.0...45.0

1000 s: (37.0...47.0)

Spread cm3 : 8.00

1000 s: (12.00)

Remarks:

Delivery-valve spring pre-tension 3.0...3.2 mm.

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks : MAC 11,1 a5 : 07.02.89 Test sheet Edition : 7.10.88 Replaces : ISO-4113 Test oil Combination no. : 0 402 746 818 Injection pump Pump designation : PES6P120A720RS7135 EP type number : 0 412 726 807 Governor : RQV325...875PA848-5K Governor design. Governer no. : 0 421 815 174 Customer-spec. information Customer : MACK Engine : EM6-275L 4VH : 202.0 1st version kW : 1950 Rated speed TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 2 417 413 011 Inlet press., bar: 1.50 Test nozzle holder : 1 688 901 101 assembly Opening : 207...210 pressure, bar Orifice plate diameter mm : 0,8

3rd speed 4th speed Test lines : 1 680 750 008 Outside diameter

x Wall thickness : 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY Test pressure, bar: 17...19

: 2.75...2.85 : (2.70...2.90) Prestroke mm Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

Phasing : 0-60-120-180-240-300

Tolerance + - 0 : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 875

Rack travel in mm : 12.20...12.30

Del.quantity cm3/: 19.0...19.2

100 s: (18.7...19.5)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 325.02nd speed Rack travel in mm: 4.6...4.8 Del.quantity cm3/: 3.7...4.3 100 s: (3.5...4.5)

Spread cm3 : 0.8100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL 1st speed rpm : 325

: 1.20...1.40 travel mm 2nd speed rom : 450

: 2.80...3.10 travel mm : 850 rpm

: 6.20...6.40 travel mm : 1000

rpm : 7.70...7.90 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1 Speed rpm : 1110 Rack travel in mm : 7.00...13.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rbm : 875 Aneroid pressure h: 1200

Del.quantity : 190.0...195.0)

: 5.00 Spread cm3 1000 : (9.00) RATED SPEED 1st version Control Lever position degrees: 52...60 Testing: 1st rack travel in: 11.20 rpm : 925...935 Speed 2nd rack travel in: 4.00 rpm : 1030...1060 Speed 4th rack travel in: 1150 rpm : 0.00...1.00Speed LOW IDLE 1 Control lever position degrees: 9...17 Testing: Speed rpm Minimum rack trave: 6.10 : 325 rpm Rack travel in mm : 4.60...4.80 CONSTANT REGULATION rpm : 325...520 Speed TORQUE CONTROL Dimension a mm Torque control curve - 1st version 1st speed rpm : 875 Rack travel in m: 12.20...12.30 2nd speed rpm : 510
Rack travel in m: 14.10...14.30
3rd speed rpm : 700
Rack travel in m: 13.20...13.40 4th speed rpm : 400 Rack travel in m: 0.00...13.80 Aneroid/Altitude Compensator Test 1st version Setting pm : 510 hPa : 1200 Speed rpm Pressure Rack travel mm : 14.10...14.30 Measurement 1/min: 510 Speed 1st pressure hPa :-Rack travel in m: 9.40...9.60
2nd pressure hPa : 280
Rack travel in m: 10.60...10.70

3rd pressure hPa : 485

M06

Rack travel in m: 12.70...13.30 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1200 Speed rpm : 510
Del.quantity cm3/ : 262.5...268.5
1000 s: (259.5...271.5) cm3 : 8.00 1000 s: (12.0) Spread Aneroid pressure h: rpm : 400 Speed Del.quantity cm3/: 145.0...149.0 1000 s: (143.0...151.0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 11.20 rpm : 925...935 STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity_cm3/ : 170.0...210.0 1000 s: (160.0...220.0) Rack travel in mm : 9.40...9.60 LOW IDLE Speed rpm : 325
Rack travel in mm : 4.60...4.80
Del.quantity cm3/ : 37.0...43.0
1000 s: (35.0...45.0) cm3 : 8.00 Spread 1000 s: (12.00) Remarks:

Delivery-valve spring pre-tension 3.0...3.2 mm.

Note remarks

Test sheet : MAC 11,1 a6 : 07.02.89 Edition : 7.10.88 Replaces Test oil : ISO-4113

: 0 402 746 819 Combination no.

Injection pump

Pump designation : PES6P120A720RS7135

: 0 412 726 807 EP type number

Governor

Governor design.: RQV325...875PA848-6K

Governer no. : 0 421 815 175

Customer-spec. information Customer : MACK

: EM6-225L 4VH Engine

1st version kW : 165.0 : 1950 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 2 417 413 011

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 101 assembly

Opening |

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter

x Wall thickness

x Length mm : 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 17...19

: 2.75...2.85 Prestroke mm

: (2.70...2.90)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-

: 0-60-120-180-240-300 Phasing

Tolerance + - 0 : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

rpm: 875 1st speed

Rack travel in mm : 11.00...11.10

Del.quantity cm3/: 15.8...16.0

100 s: (15.5...16.3)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 325.0 2nd speed

Rack travel in mm : 4.6...4.8

Del.quantity cm3/: 3.8...4.4

100 s: (3.6...4.6)

Spread cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 325

1.20...1.40 travel mm

2nd speed 450 rpm : 2.80...3.10 : 850 travel mm

3rd speed mgn

: 6.20...6.40 travel mm

: 1000 4th speed man

: 7.70...7.90 travel mm

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm: 1110
Rack travel in mm: 7.00...13.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Spēed rpm : 875

Aneroid pressure h: 900

Del.quantity : 130.3...163.5)

: 5.00 Spread cm3 1000 : (9.00) RATED SPEED 1st version Control lever position degrees: 52...60 Testing: 1st rack travel in: 10.00 Speed rpm : 925...935 2nd rack travel in: 4.00 Speed rpm : 1015...1045 4th rack travel in: 1150 rpm : 0.00...1.00 Speed LOW IDLE 1 Control lever position degrees: 9...17 Testing: Speed rpm : 275 Minimum rack trave: 6.10 rpm : 325 Rack travel in mm : 4.60...4.80 CONSTANT REGULATION rpm : 325...520 Speed TORQUE CONTROL Dimension a mm Torque control curve - 1st version rpm : 875 1st speed Rack travel in m: 11.00...11.10 rpm : 510 2nd speed Rack travel in m: 13.20...13.40 rpm : 600 3rd speed Rack travel in m: 12.50...12.70
4th speed rpm : 700
Rack travel in m: 11.80...12.00
5th speed rpm : 350 Rack travel in m: 0.00...13.20 Aneroid/Altitude Compensator Test 1st version Setting pm : 510 hPa : 900 Speed rpm Pressure Rack travel mm : 13.20...13.40 Measurement Speed 1/min: 510 1st pressure hPa : -Rack travel in m: 8.50...8.90 2nd pressure hPa : 220

80M

Rack travel in m: 9.70...9.80 3rd pressure hPa : 500 Rack travel in m: 12.00...12.40 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 900 Speed rpm Del.quantity cm3/: 234.0...240.0 1000 s: (231.0...243.0) cm3 : 8.00 Spread 1000 s: (12.0) Aneroid pressure h: -Speed rpm : 400 Del.quantity cm3/: 131.0...135.0 1000 s: (129.0...137.0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 10 00 rpm : 925...935 Speed STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/ : 135.0...175.0 1000 s: (125.0...185.0) Rack travel in mm : 8.50...8.90 LOW IDLE Speed rpm: 325
Rack travel in mm: 4.60...4.80
Del.quantity cm3/: 38.0...44.0
1000 s: (36.0...46.0)

cm3 : 8.00 Spread

1000 s: (12.00)

Remarks:

Delivery-valve spring pre-tension 3.0...3.2 mm.

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks

Test sheet : MAC 11,1 b5 : 07.02.89 : 7.10.88 Edition Replaces : ISO-4113 Test oil

Combination no. : 0 402 746 820

Injection pump

Pump designation : PES6P120A720RS7135

: 0 412 726 807 EP type number

Governor

Governor design. : RQV325...850PA878K

Governer no. : 0 421 815 177

Customer-spec. information Customer : MACK

Engine : E6-275 4VH

: 202.0 1st version kW : 1900 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 2 417 413 011

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 101 assembly

Openina .

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter x Wall thickness

x Length mm : 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ___

BEGINNING OF DELIVERY

Test pressure, bar: 17...19

Prestroke mm : 2.75...2.85 : (2.70...2.90)
Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 850

Rack travel in mm : 12.00...12.10

Del.quantity cm3/: 18.1...18.3

100 s: (17.8...18.6)

cm3 : 0.5 Spread

100 s: (0.9)

rpm : 325.0 2nd speed Rack travel in mm: 4.5...4.7 Del.quantity cm3/: 3.2...3.8 100 s: (3.0...4.0)

cm3 : 0.8Spread 100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 325

: 1.20...1.40 travel mm

2nd speed : 450 rpm travel mm

: 2.80...3.10 3rd speed : 850 mqn

: 6.20...6.40 travel mm

1000 4th speed rpm : 7.70...7.90 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1110 Speed

Rack travel in mm : 7.00...13.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 850 Aneroid pressure h: 900

Del.quantity : 181.0...183.0 1000 : (178.0...186.0)

Spread cm3 : 5.00 1000 : (9.00) RATED SPEED 1st version Control lever position degrees: 52...60 Testina: 1st rack travel in: 11.00 Speed rpm: 900...910 2nd rack travel in: 4.00 Speed rpm : 1025...1055 4th rack travel in: 1150 rpm : 0.00...1.00Speed LOW IDLE 1 Control Lever position degrees: 7...15 Testina: Speed : 275 rom

Speed rpm: 275
Minimum rack trave: 6.00
Speed rpm: 325
Rack travel in mm: 4.50...4.70

CONSTANT REGULATION Speed rpm : 325...520

TORQUE CONTROL
Dimension a mm : Torque control curve - 1st version
1st speed rpm : 850
Rack travel in m: 12.00...12.10
2nd speed rpm : 600
Rack travel in m: 12.60...12.70
3rd speed rpm : 700
Rack travel in m: 12.50...12.70
4th speed rpm : 500
Rack travel in m: 0.00...12.40

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 900
Rack travel mm : 12 6

3rd pressure hPa : 360

Rack travel mm : 12.60...12.70

Measurement
Speed 1/min: 600

1st pressure hPa: Rack travel in m: 9.50...9.90
2nd pressure hPa: 215
Rack travel in m: 10.30...10.40

Rack travel in m: 11.50...11.90

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 900
Speed rpm : 600
Pol grantity em3/: 210

Del.quantity cm3/: 210.5...216.5 1000 s: (207.5...219.5)

Spread cm3 : 8.00 1000 s: (12.0) Aneroid pressure h: -

Speed rpm : 400 Del.quantity cm3/ : 144.0...148.0

1000 s: (142.0...150.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 11.00 Speed rpm : 900...910

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 160.0...200.0 1000 s: (150.0...210.0) Rack travel in mm : 9.50...9.90

LOW IDLE

Remarks:

Delivery-valve spring pre-tension 3.0...3.2 mm.

M10

Note remarks

: MAC 11,1 b : 07.02.89 Test sheet Edition Replaces : 8.4.88 : ISO-4113 Test oil

: 0 402 746 821 Combination no.

Injection pump

Pump designation : PES6P120A720RS7135 EP type number : 0 412 726 807

Governor

Governor design. : RQV325...850PA878-1K

: 0 421 815 178 Governer no.

Customer-spec. information Customer : MACK

Engine : E6-300 4VH

1st version kW : 224.0 : 1900 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 2 417 413 011

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 101 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

Test Lines : 1 680 750 008

Outside diameter x Wall thickness

x Length mm : 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 17...19

Prestroke mm : 2.75...2.85 : (2.70...2.90)

Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4

: 0-60-120-180-240-300 Phasina

Tolerance + - 0 : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

rpm: 850 1st speed

Rack travel in mm : 12.90...13.00

Del.quantity cm3/: 20.0...20.2

100 s: (19.7...20.5)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 325.0
Rack travel in mm : 4.5...4.7
Del.quantity cm3/ : 3.2...3.8
100 s: (3.0...4.0)

cm3 : 0.8Spread 100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rom :

1.20...1.40 travel mm : 450 2nd speed rpm : 2.80...3.10 travel mm

: 850 3rd speed rpm

: 6.20...6.40 travel mm : 1000 4th speed rpm

: 7.70...7.90 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1 Speed rpm : 1100 Rack travel in mm : 7.00...13.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 850 Aneroid pressure h: 900

Del.quantity : 200.5...205.5)

: 5.00 cm3 Spread 1000 : (9.00)RATED SPEED 1st version Control Lever position degrees: 52...60 Testing: 1st rack travel in: 11.90 rpm : 900...910 Speed 2nd rack travel in: 4.00 rpm : 1025...1055 Speed 4th rack travel in: 1100 rpm : 0.00...1.00Speed LOW IDLE 1 Control lever position degrees: 7...15 Testing: Speed rpm Minimum rack trave: 6.00 : 325 rpm Rack travel in mm : 4.50...4.70 CONSTANT REGULATION rpm : 325...520 Speed TORQUE CONTROL Dimension a mm Torque control curve - 1st version 1st speed rpm : 850 Rack travel in m: 12.90...13.00 2nd speed rpm : 700 Rack travel in m: 13.30...13.50 3rd speed rpm : 600
Rack travel in m: 13.50...13.70
4th speed rpm : 500
Rack travel in m: 0.00...13.10 Aneroid/Altitude Compensator Test 1st version Setting : 600 Speed rpm hPa : 900 Pressure : 13.50...13.70 Rack travel mm Measurement 1/min : 600Speed 1st pressure hPa : -Rack travel in m: 9.90...10.30 2nd pressure hPa : 250 Rack travel in m: 10.90...11.00 3rd pressure hPa : 475

FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 900 Speed rpm : 700 Del.quantity cm3/ : 217.0...223.0 1000 s: (214.0...226.0) Aneroid pressure h: 900 : 600 Speed rpm Del.quantity cm3/: 233.0...239.0 1000 s: (230.0...242.0) cm3 : 8.00 Spread 1000 s: (12.0) Aneroid pressure h: -Speed rpm : 400 Del.quantity cm3/: 154.0...158.0 1000 s: (152.0...160.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 11.90 rpm : 900...910 Speed STARTING FUEL DELIVERY rpm : 100 Speed Del.quantity cm3/: 195.0...235.0 1000 s: (185.0...245.0) Rack travel in mm : 9.90...10.30 LOW IDLE Speed rpm Rack travel in mm : 4.50...4.70 Del.quantity cm3/: 32.0...38.0 1000 s: (30.0...40.0) cm3 : 8.00 Spread 1000 s: (12.00) Remarks: Delivery-valve spring pre-tension 3.0...3.2 mm.

Rack travel in m: 12.60...13.00

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks : MAC 11,1 b1 : 07.02.89 Test sheet Edition : 7.10.88 Replaces : ISO-4113 Test oil Combination no. : 0 402 746 822 Injection pump Pump designation : PES6P120A720RS7135 EP type number : 0 412 726 807 Governor : RQV325...900PA878-2K Governor design. : D 421 815 179 Governer no. Customer-spec. information Customer : MACK : E6-350 4VH Engine : 261.0 1st version kW : 1800 Rated speed TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 2 417 413 011 Inlet press., bar: 1.50 Test nozzle holder assembly : 1 688 901 101 **Opening** : 207...210 pressure, bar Orifice plate diameter mm : 0,6 Test lines : 1 680 750 008 Outside diameter x Wall thickness : 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 17...19

Prestroke mm : 2.75...2.85 : (2.70...2.90) Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4 : 0-60-120-180-240-300 Phasing : 0.50 (0.75) Tolerance + - 0 Time to cyl. no. : 1 BASIC SETTING 1st speed rpm: 900 Rack travel in mm : 13.90...14.00 Del.quantity cm3/: 23.6...23.8 100 s: (23.3...24.1) Spread cm3 : 0.5100 s: (0.9) rpm : 325.0 2nd speed Rack travel in mm : 4 0 ... 4.2 Del.quantity cm3/: 3....3.8 100 s: (3.0...4.0) cm3 : 0.8 Spread 100 s: (1.2) (B) Setting of injection pump with governor GUIDE SLEEVE TRAVEL 1st speed 325 rpm : : 1.20...1.40 travel mm rpm : 450 2nd speed : 3.10...3.30 travel mm : 850 3rd speed rpm : 5.90...6.10 travel mm : 1000 4th speed man : 7.50...7.70 travel mm GUIDE SLEEVE POSITION Control-lever position Degree: -1 Speed rpm : 1130 Rack travel in mm : 7.00...13.00 FULL LOAD DELIV. AT FULL LOAD STOP 1st version rpm : 900 Speed Aneroid pressure h: 900 Del.quantity : 230.3...241.5)

cm3 : 5.00 1000 : (9.00) Spread cm3 RATED SPEED 1st version Control lever position degrees: 55...63 Testina: 1st rack travel in: 12.90 rpm : 950...960 Speed 2nd rack travel in: 4.00 Speed rpm : 1075...1105 4th rack travel in: 1150 Speed rpm : 0.00...1.00 LOW IDLE 1 Control Lever position degrees: 7...15 Testina: Speed rpm : 275 Minimum rack trave: 5.50 rpm : 325 Rack travel in mm : 4.00...4.20 CONSTANT REGULATION rpm : 325...520 Speed TORQUE CONTROL Dimension a mm Torque control curve - 1st version rpm : 900 1st speed Rack travel in m: 13.90...14.00 2nd speed rpm : 625 Rack travel in m: 14.10...14.20 3rd speed rpm : 800 Rack travel in m: 14.00...14.10 4th speed rpm : 500 Rack travel in m: 0.00...13.50 Aneroid/Altitude Compensator Test 1st version Setting : 625 Speed rpm hPa : 900 Pressure : 14.10...14.20 Rack travel mm Measurement 1/min : 625 Speed

Rack travel in m: 12.30...12.70 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 900 Speed rom Del.quantity cm3/: 257.0...263.0 1000 s: (254.0...266.0) Spread cm3 : 8.001000 s: (12.0) Aneroid pressure h: -Speed rpm : 400 Del.quantity cm3/ : 142.0...146.0 1000 s: (140.0...148.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 12.90 rpm : 950...960 Speed STARTING FUEL DELIVERY Speed : 100 rpm Del.quantity cm3/: 170.0...210.0 1000 s: (160.0...220.0) Rack travel in mm : 8.50...8.90 LOW IDLE Speed rpm: 325
Rack travel in mm: 4.00...4.20
Del.quantity cm3/: 32.0...38.0
1000 s: (30.0...40.0) cm3 : 8.00 Spread 1000 s: (12.00) Remarks: Delivery-valve spring pre-tension 3.0...3.2 mm.

1st pressure hPa : -

2nd pressure hPa : 275

3rd pressure hPa : 570

Rack travel in m: 8.50...8.90

Rack travel in m: 10.00...10.10

Note remarks

Test sheet : MAC 11,1 b2 Edition : 07.02.89 Replaces : 7.10.88

: ISO-4113 Test oil

: 0 402 746 823 Combination no.

Injection pump

Pump designation : PES6P120A720RS7135

: 0 412 726 807 EP type number

Governor

Governor design. : RQV325...875PA878-3K

: D 421 815 180 Governer no.

Customer-spec. information Customer : MACK

: EM6-275L 4VH Engine

: 202.0 1st version kW : 1950 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 2 417 413 011

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 101 assembly

Opening |

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 17...19

: 2.75...2.85 : (2.70...2.90) Prestroke mm

Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - 0 : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

rpm: 875 1st speed

Rack travel in mm : 12.20...12.30

Del.quantity cm3/: 19.0...19.2

100 s: (18.7...19.5)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 325.02nd speed Rack travel in mm: 4.6...4.8 Del.quantity cm3/: 3.7...4.3 100 s: (3.5...4.5)

Spread cm3 : 0.8100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 325 1st speed travel mm

: 1.20...1.40 2nd speed rpm : 450

: 2.80...3.10 travel mm

3rd speed : 850 rpm

: 6.20...6.40 travel mm

1000 4th speed man

: 7.70...7.90 travel mm

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1 rpm : 1110 Speed

Rack travel in mm : 7.00...13.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 875

Aneroid pressure h: 1200

Del.quantity : 190.0...195.0)

: 5.00 cm3 cm3 : 5.00 1000 : (9.00) Spread RATED SPEED 1st version Control lever position degrees: 52...60 Testing: 1st rack travel in: 11.20 rpm : 925...935 Speed 2nd rack travel in: 4.00 Speed rpm : 1030...1060 4th rack travel in: 1150 Speed rpm : 0.00...1.00 LOW IDLE 1 Control lever position degrees: 9...17 Testing: Speed rpm Minimum rack trave: 1.50 : 325 rpm Rack travel in mm : 4.60...4.80 CONSTANT REGULATION rpm : 325...520 Speed TORQUE CONTROL Dimension a mm Torque control curve - 1st version rpm : 875 1st speed Rack travel in m: 12.20...12.30 rpm : 510 2nd speed Rack travel in m: 14.10...14.30 3rd speed rpm : 700 Rack travel in m: 13.20...13.40 4th speed rpm : 400 Rack travel in m: 0.00...13.80 Aneroid/Altitude Compensator Test 1st version Settina Speed rpm : 510 hPa : 1200 Pressure Rack travel mm : 14.10...14.30 Measurement 1/min: 510 Speed 1st pressure hPa : Rack travel in m: 9.40...9.60
2nd pressure hPa : 280
Rack travel in m: 10.60...10.70 3rd pressure hPa : 485

FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1200 : 510 Speed rpm Del.quantity cm3/: 262.5...268.5 1000 s: (259.5...271.5) cm3 : 8.00 Spread 1000 s: (12.0) Aneroid pressure h: -Speed rpm : 400 Del.quantity cm3/ : 145.0...149.0 1000 s: (143.0...151.0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 11.20 rpm : 925...935 Speed STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/ : 170.0...210.0 1000 s: (160.0...220.0) Rack travel in mm : 9.40...9.60 LOW IDLE rpm : 325 Rack travel in mm : 4.60...4.80 Del.quantity cm3/: 37.0...43.0 1000 s: (35.0...45.0) cm3 : 8.00Spread 1000 s: (12.00) Remarks: Delivery-valve spring pre-tension 3.0...3.2 mm.

Rack travel in m: 12.70...13.30

M16

Prestroke mm : 2.75...2.85 : (2.70...2.90)
Rack travel in mm : 9.00...12.00 BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks : 1-5-3-6-2-4 Firing order Test sheet : MAC 11,1 b3 : 07.02.89 Edition : 7.10.88 Replaces : ISO-4113 : 0-60-120-180-240-300 Test oil Phasing Combination no. : 0 402 746 824 Tolerance + - 0 : 0.50 (0.75) Injection pump Time to cyl. no. : 1 Pump designation : PES6P120A720RS7135 EP type number : 0 412 726 807 BASIC SETTING Governor Governor design: : RQV325...875PA878-4K 1st speed rpm: 875 : D 421 815 181 Governer no. Rack travel in mm : 11.00...11.10 Customer-spec. information Del.quantity cm3/: 15.8...16.0 Customer : MACK 100 s: (15.5...16.3) Engine : EM6-225L 4VH : 165.0 Spread cm3 : 0.51st version kW : 1950 Rated speed 100 s: (0.9) TEST BENCH REQUIREMENTS rpm : 325.0 2nd speed Rack travel in mm : 4.6...4.8

Del.quantity cm3/: 3.8...4.4

100 s: (3.6...4.6) Test oil inlet temp. °C : 38...42 Overflow valve Spread cm3 : 0.8: 2 417 413 011 100 s: (1.2) Inlet press., bar: 1.50 (B) Setting of injection pump with governor Test nozzle holder assembly : 1 688 901 101 GUIDE SLEEVE TRAVEL rpm : 325 : 1.20...1.40 1st speed Openina travel mm pressure, bar : 207...210 : 450 2nd speed rpm : 2.80...3.10 travel mm : 850 Orifice plate 3rd speed rpm : 6.20...6.40 diameter mm : 0,6 travel mm rpm : 1000 4th speed : 7.70...7.90 travel mm Test lines : 1 680 750 008 GUIDE SLEEVE POSITION Outside diameter Control-lever position Degree: -1 Speed rpm : 1110 Rack travel in mm : 7.00...13.00 x Wall thickness : 6.00x2.00x600 x Length mm (A) Injection pump setting values FULL LOAD DELIV. AT FULL LOAD STOP Insp. values in parentheses Set equal delivery quant. 1st version per values rpm : 875 Speed

Aneroid pressure h: 900

Del.quantity : 150.5...163.5)

BEGINNING OF DELIVERY

Test pressure, bar: 17...19

cm3 : 5.00 1000 : (9.00) Spread cm3 RATED SPEED 1st version Control Lever position degrees: 52...60 Testing: 1st rack travel in: 10.00 Speed rpm: 925...935 2nd rack travel in: 4.00 rpm : 1015...1045 Speed 4th rack travel in: 1150 rpm : 0.00...1.00Speed LOW IDLE 1 Control lever position degrees: 9...17 Testing: Speed rpm Minimum rack trave: 6.10 : 325 rpm Rack travel in mm : 4.60...4.80 CONSTANT REGULATION rpm : 325...520 Speed TORQUE CONTROL Dimension a mm : -Torque control curve - 1st version rpm : 875 1st speed Rack travel in m: 11.00...11.10 rpm : 510 2nd speed Rack travel in m: 13.20...13.40 3rd speed rpm : 600 Rack travel in m: 12.50...12.70 4th speed rpm : 700 Rack travel in m: 11.80...12.00 5th speed rpm : 350 Rack travel in m: 0.00...13.20 Aneroid/Altitude Compensator Test 1st version Setting pm : 510 hPa : 900 Speed rpm Pressure : 13.20...13.40 Rack travel mm Measurement Speed $1/\min : 510$ 1st pressure hPa : -Rack travel in m: 8.50...8.90 2nd pressure hPa : 220

M18

Rack travel in m: 9.70...9.80 3rd pressure hPa : 500 Rack travel in m: 12.00...12.40 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 900 Speed rpm : 510
Del.quantity cm3/ : 234.0...240.0
1000 s: (231.0...243.0) cm3 : 8.00 1000 s: (12.0) Spread Aneroid pressure h: rpm : 400 Speed Del.quantity cm3/: 131.0...135.0 1000 s: (129.0...137.0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 10.00 rpm : 925...935 Speed STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/ : 135.0...175.0 1000 s: (125.0...185.0) Rack travel in mm : 8.50...8.90 LOW IDLE Speed rpm : 325 Rack travel in mm : 4.60...4.80 Del.quantity cm3/: 38.0...44.0 1000 s: (36.0...46.0) Spread cm3 : 8.00

Remarks:

Delivery-valve spring pre-tension 3.0...3.2 mm.

1000 s: (12,00)

: 2.75...2.85 : (2.70...2.90) BOSCH INJ. PUMP TEST SPECIFICATIONS Prestroke mm Rack travel in mm : 9.00...12.00 Note remarks : 1-5-3-6-2-4 Firing order : MAC 11,1 b6 : 07.02.89 Test sheet Edition : 7.10.88 Replaces : ISO-4113 : 0-60-120-180-240-300 Test oil Phasing Combination no. : 0 402 746 825 Tolerance + - 0 : 0.50 (0.75) Injection pump Time to cyl. no. : 1 Pump designation : PES6P120A720RS7135 EP type number : 0 412 726 807 BASIC SETTING Governor Governor design. : RQV325...900PA878-5K 1st speed rpm: 900 : D 421 815 182 Governer no. Rack travel in mm : 14.60...14.70 Customer-spec. information Del.quantity cm3/: 24.1...24.3 Customer : MACK : EC6-350 4VH 100 s: (23.8...24.6) Engine 1st version kW : 261.0 Spread cm3 : 0.5: 1800 Rated speed 100 s: (0.9) TEST BENCH REQUIREMENTS rpm : 325.0 2nd speed Rack travel in mm : 4.9...5.1 Del.quantity cm3/: 3.9...4.5 Test oil inlet temp. °C : 38...42 100 s: (3.7...4.7) Overflow valve Spread cm3 : 0.8: 2 417 413 011 100 s: (1.2) Inlet press., bar: 1.50 (B) Setting of injection pump with governor Test nozzle holder : 1 688 901 101 assembly GUIDE SLEEVE TRAVEL rpm : 325 : 1.20...1.40 1st speed Openina travel mm : 207...210 2nd speed rpm : 450 pressure, bar : 3.10...3.30 travel mm : 850 Orifice plate 3rd speed man diameter mm : 0,6 : 5.90...6.10 travel mm : 1000 4th speed rpm : 7.50...7.70 travel mm Test lines : 1 680 750 008 GUIDE SLEEVE POSITION Outside diameter Control-lever position x Wall thickness Degree: -1 : 6.00x2.00x600 rpm : 1130 x Length mm Speed Rack travel in mm : 7.00...13.00 (A) Injection pump setting values FULL LOAD DELIV. AT FULL LOAD STOP Insp. values in parentheses Set equal delivery quant. per values 1st version Speed rpm : 900 Aneroid pressure h: 1200 Del.quantity : 241.5...243.5 BEGINNING OF DELIVERY

Del.quantity : 241.3...246.5)

Test pressure, bar: 17...19

: 5.00 cm3 Spread 1000 : (9.00) RATED SPEED 1st version Control lever position degrees: 53...61 Testing: 1st rack travel in: 13.60 rpm : 950...960 Speed 2nd rack travel in: 4.00 rpm : 1090...1120 Speed 4th rack travel in: 1200 rpm : 0.00...1.00 Speed LOW IDLE 1 Control lever position degrees: 7...15 Testing: Speed rom Minimum rack trave: 1.50 Speed rpm : 325 Rack travel in mm : 4.90...5.10 CONSTANT REGULATION rpm : 325...520 Speed TORQUE CONTROL Dimension a mm 1st speed rpm : 900

Torque control curve - 1st version Rack travel in m: 14.60...14.70 rpm : 625 2nd speed Rack travel in m: 14.90...15.10 : 800 3rd speed rpin Rack travel in m: 14.70...14.80 rpm : 500 4th speed Rack travel in m: 0.00...14.50

Aneroid/Altitude Compensator Test

1st version Setting Speed : 625 rpm hPa : 1200 Pressure : 14.90...15.10 Rack travel mm

Measurement 1/min: 625 Speed

1st pressure hPa : -Rack travel in m: 8.10...8.50 2nd pressure hPa : 280 Rack travel in m: 10.40...10.50 3rd pressure hPa : 650

Rack travel in m: 13.30...13.70

FUEL DELIVERY CHARACTERISTICS

1st version Aneroid pressure h: 1200 : 625 rpm

Del.quantity cm3/: 265.0...271.0 1000 s: (262.0...274.0)

Spread cm3 : 8.001000 s: (12.0) Aneroid pressure h: rpm : 400 Speed

Del.quantity cm3/: 130.5...134.5 1000 s: (128.5...136.5)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 13.60 rpm : 950...960 Speed

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 120.0...160.0 1000 s: (110.0...170.0)

Rack travel in mm : 8.10...8.50

LOW IDLE

: 325 Speed rpm Rack travel in mm: 4.90...5.10 Del.quantity cm3/: 39.0...45.0 1000 s: (37.0...47.0) Spread

cm3 : 8.00 1000 s: (12.00)

Remarks:

Delivery-valve spring pre-tension 3.0...3.2 mm.

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Note remarks

Test sheet : MAC 11,1 b4 : 07.02.89 Edition : 7.10.88 Replaces Test oil : ISO-4113

: 0 402 746 826 Combination no.

Injection pump

Pump designation : PES6P120A720RS7135

: 0 412 726 807 EP type number

Governor

Governor design. : RQV325...875PA878-6K

Governer no. : 0 421 815 183

Customer-spec. information Customer : MACK

Engine : EM6-250L 4VH

1st version kW : 186.0 : 1950 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 2 417 413 011

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 101 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter

x Wall thickness

x Length mm : 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 17...19

: 2.75...2.85 : (2.70...2.90) Prestroke mm

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

Phasing : 0-60-120-180-240-300

Tolerance + - 0 : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 875

Rack travel in mm : 10.80...10.90

Del.quantity cm3/: 16.3...16.5

100 s: (16.0...16.8)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 325.02nd speed Rack travel in mm: 4.5...4.7

Del.quantity cm3/: 3.9...4.5 100 s: (3.7...4.7) Spread cm3: 0.8

100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 325

1.20...1.40 travel mm

: 450 2nd speed rom

travel mm : 2.80...3.20

: 850 3rd speed rpm

: 6.20...6.40 travel mm

: 1000 4th speed rpm

: 7.70...7.90 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1
Speed rpm: 1100
Rack travel in mm: 7.00...13.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 875

Aneroid pressure h: 1200

Del.quantity : 163.0...168.0)

cm3 : 5.00 Spread

1000 : (9.00)

RATED SPEED

1st version Control lever

position degrees: 52...60

Testina:

1st rack travel in: 9.80

Speed rpm : 925...935 2nd rack travel in: 4.00 Speed

Speed rpm : 1010...1040

4th rack travel in: 1100

rpm : 0.00...1.00Speed

LOW IDLE 1 Control lever

position degrees: 9...17

Testina:

: 275 Speed rpm Minimum rack trave: 6.00 rpm

Rack travel in mm : 4.50...4.70

CONSTANT REGULATION

rpm : 325...520 Speed

TORQUE CONTROL

Dimension a mm

Torque control curve - 1st version

1st speed rpm : 875
Rack travel in m: 10.80...10.90
2nd speed rpm : 510
Rack travel in m: 13.00...13.20

rpm : 700 3rd speed

Rack travel in m: 11.60...11.80

4th speed rpm : 550

Rack travel in m: 0.00...13.10

Aneroid/Altitude Compensator Test

1st version

Setting

Speed : 510 rpm hPa : 1200 Pressure

: 13.00...13.20 Rack travel mm

Measurement

1/min: 510 Speed

1st pressure hPa : -

Rack travel in m: 8.60...9.00 2nd pressure hPa : 215 Rack travel in m: 10.30...10.40

3rd pressure hPa : 435

1st version

Aneroid pressure h: 1200

FUEL DELIVERY CHARACTERISTICS

Speed rpm : 510

Del.quantity cm3/ : 240.0...246.0

1000 s: (237.0...249.0)

Spread cm3 : 8.00

1000 s: (12.0)

Rack travel in m: 12.20...12.60

Aneroid pressure h: -

: 400 Speed rom

Del.quantity cm3/: 146.0...150.0 1000 s: (144.0...152.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.80

rpm : 925...935 Speed

STARTING FUEL DELIVERY

Speed : 100 rpm

Del.quantity cm3/: 145.0...185.0 1000 s: (135.0...195.0)

Rack travel in mm : 8.60...9.00

LOW IDLE

Speed rpm : 325

Rack travel in mm : 4.50...4.70 Del.quantity cm3/: 39.0...45.0 1000 s: (37.0...47.0)

cm3 : 8.00 Spread

1000 s: (12.00)

Remarks:

Delivery-valve spring pre-tension 3.0...3.2 mm.

Note remarks

Test sheet : MAC 11,1 c : 07.02.89 Edition Replaces : 7.10.88 : ISO-4113 Test oil

: 0 402 746 827 Combination no.

Injection pump

Pump designation : PES6P120A720RS7148

EP type number : 0 412 726 810

Governor

Governor design. : RQV325...875PA848-7K

: 0 421 815 176 Governer no.

Customer-spec. information Customer : MACK

: EM6 300L 4VH Engine

: 224.0 1st version kW : 1950 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 2 417 413 011

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 101 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 17...19

: 2.75...2.85 : (2.70...2.90) Prestroke mm

Rack travel in mm : 6.00...8.00

: 1-5-3-6-2-4 Firing order

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 875

Rack travel in mm : 11.10...11.20

Del.guantity cm3/: 19.9...20.1

100 s: (19.6...20.4)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 325.0 2nd speed Rack travel in mm: 4.5...4.7 Del.quantity cm3/: 3.9...4.5

100 s: (3.7...4.7)

Spread cm3 : 0.8100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 325

: 1.20...1.40 travel mm

rpm : 450 2nd speed

: 2.50...2.80 travel mm

3rd speed : 600 rpm

: 4.10...4.30 travel mm

: 875 : 7.30...7.50 4th speed rpm travel mm

5th speed 1000

rpm : 8.70...9.00 travel mm

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1 rpm : 1040 Speed

Rack travel in mm : 6.00...12.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 875 Aneroid pressure h: 1500

Del.quantity : 199.0...201.0 1000 : (196.0...204.0) : 5.00 Spread cm3 1000 : (9.00) RATED SPEED 1st version Control lever position degrees: 55...63 Testing: 1st rack travel in: 10.10 rpm : 915...925 Speed 2nd rack travel in: 4.00 rpm : 1000...1030 Speed 4th rack travel in: 1150 Speed rpm : 0.00...1.00LOW IDLE 1 Control lever position degrees: 7...15 Testing: Speed : 275 man Minimum rack trave: 6.60 Speed : 325 rpm Rack travel in mm : 4.50...4.70 CONSTANT REGULATION rpm : 325...520 Speed TORQUE CONTROL Dimension a mm Torque control curve - 1st version rpm : 875 1st speed Rack travel in m: 11.10...11.20 rpm : 510 2nd speed Rack travel in m: 16.50...16.70 3rd speed rpm : 700 Rack travel in m: 13.30...13.50 4th speed rpm : 600 Rack travel in m: 15.50...15.70 5th speed rpm : 450 Rack travel in m: 0.00...16.60 Aneroid/Altitude Compensator Test 1st version Setting rpm : 510 hPa : 1500 mm : 16.50...16.70 Speed rom Pressure Rack travel mm

1/min: 510

Rack travel in m: 8.30...8.70 2nd pressure hPa : 370 Rack travel in m: 10.70...10.80 3rd pressure hPa : 710 Rack travel in m: 14.40...14.80 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1500 Speed rpm : 510 Del.quantity cm3/ : 299.0...305.0 1000 s: (296.0...308.0) Spread cm3 : 8.00 1000 s: (12.0) Aneroid pressure h: -Speed rpm Del.quantity cm3/: 152.5...156.5 1000 s: (150.5...158.5) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 10.10 rpm : 915...925 Speed STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/ : 140.0...160.0 1000 s: (135.0...165.0) Rack travel in mm : 8.30...8.70 LOW IDLE : 325 Speed rpm Rack travel in mm : 4.50...4.70 Del.quantity cm3/: 39.0...45.0 1000 s: (37.0...47.0) cm3 : 8.00 Spread 1000 s: (12.00) Remarks:

Delivery-valve spring pre-tension 3.0...3.2 mm.

Measurement

1st pressure hPa : -

Speed

: 2.75...2.85 : (2.70...2.90) BOSCH INJ. PUMP TEST SPECIFICATIONS Prestroke mm Rack travel in mm: 6.00...8.00 Note remarks : 1-5-3-6-2-4 Firing order Test sheet : MAC 11,1 d Edition : 07.02.89 Replaces : 7.10.88 Test oil : ISO-4113 : 0-60-120-180-240-300 Phasing Combination no. : 0 402 746 828 Tolerance + - 0 : 0.50 (0.75) Injection pump Time to cyl. no. : 1 Pump designation : PES6P120A720RS7148 EP type number : 0 412 726 810 BASIC SETTING Governor Governor design. : RQV325...875PA878-7K 1st speed rpm: 875 : 0 421 815 184 Governer no. Rack travel in mm : 11.10...11.20 Customer-spec. information Customer Del.quantity cm3/: 19.9...20.1 : MACK Engine : EM6 300L 4VH 100 s: (19.6...20.4) : 224.0 1st version kW Spread cm3 : 0.5: 1950 Rated speed 100 s: (0.9) TEST BENCH REQUIREMENTS rpm : 325.0 2nd speed Rack travel in mm : 4.5...4.7 Del.quantity cm3/ : 3.9...4.5 Test oil inlet temp. °C : 38...42 100 s: (3.7...4.7) Overflow valve Spread cm3 : 0.8: 2 417 413 011 100 s: (1.2) Inlet press., bar: 1.50 (B) Setting of injection pump with governor Test nozzle holder : 1 688 901 101 assembly GUIDE SLEEVE TRAVEL rpm : 325 : 1.20...1.40 1st speed **Opening** travel mm : 207...210 pressure, bar : 450 2nd speed rom : 2.50...2.80 travel mm Orifice plate : 600 3rd speed rpm : 4.10...4.30 diameter mm : 0,6 travel mm : 875 4th speed rpm 7.30...7.50 travel mm Test lines : 1 680 750 008 : 1000 5th speed rpm : 8.70...9.00 travel mm Outside diameter x Wall thickness GUIDE SLEEVE POSITION Control-Lever position x Length mm : 6.00X2.00X600 Degree: -1 rpm : 1040 (A) Injection pump setting values Speed

Rack travel in mm : 6.00...12.00 Insp. values in parentheses Set equal delivery quant.

per values ____ FULL LOAD DELIV. AT FULL LOAD STOP

BEGINNING OF DELIVERY 1st version

Test pressure, bar: 17...19 Speed rpm : 875 Aneroid pressure h: 1500

Del.quantity : 199.0...201.0 1000 : (196.0...204.0) : 5.00 Spread cm3 1000 : (9.00) RATED SPEED 1st version Control lever position degrees: 55...63 Testing: 1st rack travel in: 10.10 rpm : 915...925 Speed 2nd rack travel in: 4.00 Speed rpm : 1000...1030 4th rack travel in: 1150 Speed rpm : 0.00...1.00 LOW IDLE 1 Control lever position degrees: 7...15 Testing: : 275 Speed rpm Minimum rack trave: 6.00 : 325 rpm Rack travel in mm : 4.50...4.70 CONSTANT REGULATION rpm : 325...520 Speed TORQUE CONTROL Dimension a mm Torque control curve - 1st version 1st speed rpm : 875 Rack travel in m: 11.10...11.20 nd speed rpm : 510 Rack travel in m: 16.50...16.70 2nd speed d speed rpm : 700 Rack travel in m: 13.30...13.50 3rd speed : 600 4th speed rpm Rack travel in m: 15.50...15.70 rpm : 450 5th speed Rack travel in m: 0.00...16.60 Aneroid/Altitude Compensator Test 1st version Setting Speed : 510 man hPa : 1500 Pressure : 16.50...16.70 Rack travel mm Measurement 1/min: 510 Speed

1st pressure hPa : -

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Rack travel in m: 8.30...8.70 2nd pressure hPa : 370 Rack travel in m: 10.70...10.80 3rd pressure hPa : 710 Rack travel in m: 14.40...14.80 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1500 Speed rpm Del.quantity cm3/: 299.0...305.0 1000 s: (296.0...308.0) cm3 : 8.00 Spread 1000 s: (12.0) Aneroid pressure h: -Speed rpm : 400 Del.quantity cm3/ : 152.5...156.5 1000 s: (150.5...158.5) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 10.10 peed rpm : 915...925 Speed STARTING FUEL DELIVERY : 100 Speed rpm Del.quantity cm3/: 140.0...160.0 1000 s: (135.0...165.0) Rack travel in mm : 8.30...8.70 LOW IDLE Speed rpm Rack travel in mm : 4.50...4.70 Del.quantity cm3/: 39.0...45.0 1000 s: (37.0...47.0) cm3 : 8.00 Spread 1000 s: (12.00) Remarks:

Delivery-valve spring pre-tension 3.0...3.2 mm.

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : MAC 11,1 a7 : 07.02.89 Edition Replaces : 7.10.88 Test oil : ISO-4113 : 0 402 746 829 Combination no. Injection pump Pump designation : PES6P120A720RS7135 : 0 412 726 807 EP type number Governor Governor design. : RQV325..1050PA848-8K Governer no. : 0 421 815 185 Customer-spec. information Customer : MACK : E6-270 4VH Engine : 201.0 1st version kW : 2100 Rated speed TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 2 417 413 011 Inlet press., bar: 1.50 Test nozzle holder assembly : 1 688 901 101 **Opening** : 207...210 pressure, bar Orifice plate diameter mm : 0,6 : 1 680 750 008 Test lines Outside diameter x Wall thickness : 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values BEGINNING OF DELIVERY Test pressure, bar: 17...19

Prestroke mm : 2.75...2.85 : (2.70...2.90) Rack travel in mm : 9.00...12.00 : 1-5-3-6-2-4 Firing order Phasing : 0-60-120-180-240-300 : 0.50 (0.75) Tolerance + - 0 Time to cyl. no. : 1 BASIC SETTING rpm: 1050 1st speed Rack ***vel in mm : 12.20...12.30 Del. ** tity cm3/ : 17.4...17.6 100 s: (17.1...17.9) cm3 : 0.5Spread 100 s: (0.9) rpm : 325.0 2nd speed Rack travel in mm: 4.9...5.1 Del.quantity cm3/: 3.8...4.4 100 s: (3.6...4.6) cm3 : 0.8 Spread 100 s: (1.2) (B) Setting of injection pump with governor GUIDE SLEEVE TRAVEL 1st speed 325 rom : 1.40...1.60 travel mm rpm : 450 2nd speed 2.50...2.80 travel mm : 800 3rd speed rpm : 4.80...5.00 travel mm rpm : 1050 4th speed : 7.30...7.60 travel mm rom : 1200 5th speed : 9.40...9.60 travel mm GUIDE SLEEVE POSITION Control-lever position Degree: -1 Speed rpm: 1210 Rack travel in mm: 7.00...13.00 FULL LOAD DELIV. AT FULL LOAD STOP 1st version

rpm : 1050

Aneroid pressure h: 900

Speed

Del.quantity : 174.0...176.0 1000 : (171.0...179.0) Rack travel in m: 9.60...9.70 3rd pressure hPa : 400 : 5.00 Rack travel in m: 11.00...11.50 Spread cm3 1000 (9.00) FUEL DELIVERY CHARACTERISTICS RATED SPEED 1st version 1st version Aneroid pressure h: 900 Control Lever Speed rpm : 630 Del.quantity cm3/ : 192.0...198.0 1000 s: (189.0...201.0) position degrees: 55...63 Testing: 1st rack travel in: 11.20 Speed rpm : 1090...1100 cm3 : 8.00 Spread 1000 s: (12.0) 2nd rack travel in: 4.00 Aneroid pressure h: rom : 1170...1200 : 400 Speed Speed rpm Del.quantity cm3/: 129.0...133.0 1000 s: (127.0...135.0) 4th rack travel in: 1300 rpm : 0.00...1.00Speed LOW IDLE 1 Control lever **BREAKAWAY** position degrees: 10...18 1st version Testing: 1mm rack travel less than Speed rpm : 275 Minimum rack trave: 6.40 full load rack tr: 11.20 Speed rpm : 325 rpm : 1090...1100 Rack travel in mm : 4.90...5.10 STARTING FUEL DELIVERY CONSTANT REGULATION rpm : 325...600 Speed Speed rpm : 100 Del.quantity cm3/ : 135.0...175.0 1000 s: (125.0...185.0) TORQUE CONTROL Dimension a mm Torque control curve - 1st version Rack travel in mm : 8.60...9.00 1st speed rpm : 1050 Rack travel in m: 12.20...12.30 LOW IDLE nd speed rpm : 630 Rack travel in m: 12.00...12.20 2nd speed Speed rpm : 325
Rack travel in mm : 4.90...5.10
Del.quantity cm3/ : 38.0...44.0
1000 s: (36.0...46.0) 3rd speed rpm : 925 Rack travel in m: 11.90...12.10 4th speed rpm : 800 Rack travel in m: 12.20...12.40 cm3 : 8.00 Spread 1000 s: (12.00) Aneroid/Altitude Compensator Test Remarks: Delivery-valve spring pre-tension 3.0...3.2 mm. 1st version Setting Speed : 630 rom hPa : 900 mm : 12.00...12.10 Pressure Rack travel mm Measurement Speed $1/\min : 630$ 1st pressure hPa : -Rack travel in m: 8.60...9.00 2nd pressure hPa : 270

Note remarks

Test sheet : MAC 11,1 a8 Edition : 10.02.89 Replaces : 6.4.88 Test oil : ISO-4113

Combination no. : 0 402 746 832

Injection pump

Pump designation : PES6P120A720RS7135

: 0 412 726 807 EP type number

Governor

: RQV325...900PA848-10 Governor design.

: 0 421 815 189 Governer no.

Customer-spec. information Customer : MACK

: EM6 275 2VH Engine

: 202.0 1st version kW : 1800 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 2 417 413 011

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 101 assembly

Openina

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

Test Lines : 1 680 750 008

Outside diameter x Wall thickness

x Length mm : 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 17...19

Prestroke mm : 2.75...2.85 : (2.70...2.90)
Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

Phasina : Ω-60-120-180-240-300

Tolerance + - 0 : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 900

Rack travel in mm : 12.30...12.40

Del.quantity cm3/: 18.7...18.9

100 s: (18.4...19.2)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 325.0 2nd speed

Rack travel in mm : 4.6...4.8 Del.quantity cm3/: 3.7...4.3 100 s: (3.5...4.5)

Spread cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

325 1st speed rpm :

1.20...1.40 travel mm

rpm : 450 2nd speed

: 3.10...3.30 rpm : 850 travel mm

3rd speed

travel mm : 5.90...6.10

rpm : 10004th speed travel mm : 7.50...7.70

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1120

Rack travel in mm : 7.00...13.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 900 Aneroid pressure h: 900

Del.quantity : 787.0...192.0) : 5.00 Spread cm3 1000 : (9.00) RATED SPEED 1st version Control lever position degrees: 51...59 Testing: 1st rack travel in: 11.30 Speed rpm : 950...960 2nd rack travel in: 4.00 rpm : 1055...1085 Speed 4th rack travel in: 1150 Speed rpm : 0.00...1.00LOW IDLE 1 Control lever position degrees: 9...17 Testing: Speed rpm Minimum rack trave: 6.10 : 325 Speed rpm Rack travel in mm : 4.60...4.80 CONSTANT REGULATION rpm : 325...480 Speed TORQUE CONTROL Dimension a mm Torque control curve - 1st version 1st speed rpm : 900_ Rack travel in m: 12.30...12.40 nd speed rpm : 540 Rack travel in m: 13.40...13.60 2nd speed 3rd speed rpm : 700 Rack travel in m: 12.70...12.90 4th speed rpm : 450 Rack travel in m: 0.00...13.50 Aneroid/Altitude Compensator Test 1st version Setting Speed : 540 rpm hPa : 900 Pressure : 13.40...13.60 Rack travel mm Measurement 1/min: 540 Speed 1st pressure hPa : -Rack travel in m: 9.00...9.40

Rack travel in m: 10.20...10.30 3rd pressure hPa : 550 Rack travel in m: 12.00...12.40 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 900 Speed rpm : 540
Del.quantity cm3/: 239.0...247.0
1000 s: (237.0...249.0) cm3 : 8.00 1000 s: (12.0) Spread Aneroid pressure h: rpm : 400 Speed Del.quantity cm3/: 142.0...146.0 1000 s: (140.0...148.0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 11.30 rpm : 950...960 Speed STARTING FUEL DELIVERY LOW IDLE rpm : 325

Rack travel in mm : 4.60...4.80 Del.quantity cm3/ : 37.0...43.0 1000 s: (35.0...45.0) cm3 : 8.00Spread 1000 s: (12.00)

Remarks:

Delivery-valve spring pre-tension 3.0...3.2 mm.

NO2

2 2nd pressure hPa : 320

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks : MAC 11,1 a9 : 10,02,89 Test sheet Edition Replaces : 7.10.88 Test oil : ISO-4113 : 0 402 746 833 Combination no. Injection pump Pump designation : PES6P120A720RS7135 EP type number : 0 412 726 807 Governor : RQV325...975PA848-11 Governor design. : 0 421 815 190 Governer no. Customer-spec. information Customer : MACK : E6-350 2VH Engine 1st version kW : 257.0 : 1950 Rated speed TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 2 417 413 011 Inlet press., bar: 1.50 Test nozzle holder : 1 688 901 101 assembly **Opening** : 207...210 pressure, bar Orifice plate diameter mm : 0.6 Test lines : 1 680 750 008 Outside diameter x Wall thickness : 6.00X2.00X600 x Length mm (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values BEGINNING OF DELIVERY

Prestroke mm : 2.75...2.85 : (2.70...2.90) Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4 Phasina : 0-60-120-180-240-300 Tolerance + - 0 : 0.50 (0.75) Time to cyl. no. : 1 BASIC SETTING rpm: 975 1st speed Rack travel in mm : 14.10...14.20 Del.guantity cm3/: 23.0...23.2 100 s: (22.7...23.5) Spread cm3 : 0.5100 s: (0.9) rpm : 325.0 2nd speed Rack travel in mm: 4.5...4.7 Del.quantity cm3/: 3.8...4.4 100 s: (3.6...4.6) Spread cm3 : 0.8100 s: (1.2) (B) Setting of injection pump with governor GUIDE SLEEVE TRAVEL rpm : 325 : 1.40...1.60 1st speed travel mm : 450 2nd speed rpm : 2.50...2.80 travel mm : 800 3rd speed rpm : 4.80...5.00 travel mm : 1050 4th speed rpm travel mm : 7.30...7.60 5th speed 1200 rpm : 9.40...9.60 travel mm GUIDE SLEEVE POSITION Control-lever position Degree: -1 rpm : 1190 Rack travel in mm : 7.00...13.00 FULL LOAD DELIV. AT FULL LOAD STOP 1st version

rpm : 975

Speed

Test pressure, bar: 17...19

Aneroid pressure h: 900 Del.quantity : 230.5...232.5 1000 : (227.5...235.5) Spread cm3 : 5.00 1000 : (9.00) RATED SPEED 1st version Control lever position degrees: 55...63 Testing: 1st rack travel in: 13.10 Speed rpm : 1015...1025 2nd rack travel in: 4.00 : 1130...1160 Speed rom 4th rack travel in: 1300 Speed rpm : 0.00...1.00LOW IDLE 1 Control Lever position degrees: 10...18 Testing: Speed : 275 rom Minimum rack trave: 6.00 rpm : 325 Rack travel in mm : 4.50...4.70 CONSTANT REGULATION rpm : 325...600 Speed TORQUE CONTROL Dimension a mm Torque control curve - 1st version rpm : 975 1st speed Rack travel in m: 14.10...14.20 rpm : 700 2nd speed Rack travel in m: 13.70...13.90 3rd speed rpm : 600 Rack travel in m: 0.00...13.30 Aneroid/Altitude Compensator Test 1st version Setting Speed : 700 rpm Pressure hPa : 900 : 13.80...13.90 Rack travel mm Measurement 1/min: 700 Speed 1st pressure hPa : -Rack travel in m: 7.80...8.20 2nd pressure hPa : 240

Rack travel in m: 9.30...9.40

3rd pressure hPa : 510 Rack travel in m: 12.20...12.60 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 900 : 700 Speed rpm Del.quantity cm3/: 237.0...233.0 1000 s: (224.0...236.0) Spread cm3 : 8.00 1000 s: (12.0) Aneroid pressure h: rpm : 400 Speed Del.quantity cm3/: 125.0...129.0 1000 s: (123.0...131.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 13.10 rpm : 1015...1025 Speed -STARTING FUEL DELIVERY rpm : 100 Speed Del.quantity cm3/: 110.0...150.0 1000 s: (100.0...160.0) Rack travel in mm: 7.80...8.20 LOW IDLE rpm : 325 Speed Rack travel in mm : 4.50...4.70 Del.quantity cm3/: 38.0...44.0 1000 s: (36.0...46.0) cm3 : 8.00 Spread 1000 s: (12.00) Remarks: Delivery-valve spring pre-tension 3.0...3.2 mm.

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks : UNI 9,5 e : 24.02.89 : 30.9.88 Test sheet Edition Replaces Test oil : ISO-4113 : 0 402 746 834 Combination no. Injection pump Pump designation : PES6P120A720RS7154 EP type number : 0 412 726 811 Governor Governor design. : RQV275...1100PA888K : 0 421 815 191 Governer no. Customer-spec. information : IVECO-UNIC Customer : 8460.41.102 Engine 1st version kW : 235.0 : 2200 Rated speed TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 417 413 025 Inlet press., bar: 1.50 Test nozzle holder : 1 688 901 105 assembly Opening : 207...210 pressure, bar Orifice plate diameter mm : 0,8 : 1 680 750 008 Test lines Outside diameter x Wall thickness x Length mm : 6.00X2.00X600 (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

Prestroke mm : 5.00...5.10 : (4.95...5.15) Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4 Phasina : 0-60-120-180-240-300 Tolerance + - 0 : 0.50 (0.75) Time to cyl. no. : 1 BASIC SETTING 1st speed rpm: 1100 Rack travel in mm : 11.60...11.70 Del.quantity cm3/: 21.4...21.6 100 s: (21.1...21.9) Spread cm3 : 0.5100 s: (0.9) 2nd speed rpm : 275.0
Rack travel in mm : 4.9...5.1
Del.quantity cm3/ : 2.0...2.6 100 s: (1.7...2.9) Spread cm3 : 0.8100 s: (1.2) (B) Setting of injection pump with governor GUIDE SLEEVE TRAVEL 1st speed rpm : 275 1.20...1.40 travel mm 2nd speed : 450 man : 3.10...3.90 : 800 travel mm 3rd speed rpm : 6.30...6.70 travel mm : 1100 4th speed rpm : 9.70...9.90 travel mm : 1200 5th speed rpm : 13.00...14.00 travel mm GUIDE SLEEVE POSITION Control-lever position Degree: -1 Speed rpm : 1125 Rack travel in mm : 15.20...17.80 FULL LOAD DELIV. AT FULL LOAD STOP 1st version

rpm : 1100

Aneroid pressure h: 1200

Speed

per values __

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Del.quantity : 214.0...219.0) : 5.00 cm3 Spread 1000 : (9.00) RATED SPEED 1st version Control Lever position degrees: 53...61 Testing: 1st rack travel in: 10.60 rpm : 1140...1150 Speed 2nd rack travel in: 4.00 rpm : 1200...1230 Speed 4th rack travel in: 1350 Speed rpm : 0.00...1.00 LOW IDLE 1 Control lever position degrees: 11...19 Testing: Speed : 100 rom Minimum rack trave: 6.50 Speed rpm : 275 Rack travel in mm : 4.90...5.10 CONSTANT REGULATION rpm : 280...400 Speed TORQUE CONTROL Dimension a mm Torque control curve - 1st version 1st speed rpm : 850 Rack travel in m: 12.00...12.10 2nd speed rpm : 1100 Rack travel in m: 11.60...11.70 3rd speed rpm : 950 Rack travel in m: 11.90...12.10 4th speed rpm : 750 Rack travel in m: 11.80...12.00 5th speed rpm : 400 Rack travel in m: 11.20...11.40 Aneroid/Altitude Compensator Test 1st version Setting rpm : 85U hPa : 1200 Speed Pressure : 12.00...12.10 Rack travel mm Measurement 1/min: 850 Speed

Rack travel in m: 9.00...9.20 2nd pressure hPa : 515
Rack travel in m: 11.30...11.40
3rd pressure hPa : 305
Rack travel in m: 9.70...9.90 START CUT-OUT 1/min: 195 (215) Speed FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1200 rpm : 850 Speed Del.quantity cm3/: 196.0...202.0 1000 s: (193.0...205.0) Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/ : 127.0...129.0 1000 s: (124.0...132.0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 10.60 rpm : 1140...1150 Speed STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 120.0...150.0 1000 s: (116.0...154.0)

Remarks:

N06

1st pressure hPa : -

Note remarks

: PER 12,2 d Test sheet Edition : 07.02.89

Replaces

Test oil : ISO-4113

Combination no. : 0 402 746 835

Injection pump

Pump designation : PES6P120A320RS7156

EP type number : 0 412 726 813

Governor

Governor design. : RQV250..1050PA793-2

: 0 421 813 699 Governer no.

Customer-spec. information Customer : PERKINS

: EAGLE TX Engine

: 280.0 1st version kW : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Openina

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter

x Wall thickness

: 6.00X1.50X1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ___

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 4.50...4.60 Prestroke mm : (4.45...4.65)

Rack travel in mm : 9.00...12.00

: 1-4-2-6-3-5 Firing order

Phasing : 0-60-120-180-240-300

Tolerance + - 0 : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 900

Rack travel in mm : 14.20...14.30

Del.quantity cm3/: 27.7...27.9

100 s: (27.4...28.2)

Spread cm3 : 0.6

100 s: (0.9)

rpm : 250.0 2nd speed Rack travel in mm : 5.9...6.1 Del.quantity cm3/ : 1.3...1.7 100 s: (1.0...2.0)

cm3 : 0.3Spread

100 s: (0.6)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

rpm : 250 1st speed

: 0.90...1.30 travel mm

350 2nd speed rpm

2.90...3.50 travel mm

: 700 3rd speed rpm

: 4.00...4.60 travel mm

1000 4th speed rom :

travel mm : 7.40...7.60 : 1100 5th speed

rpm

: 8.80...9.20 travel mm

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1 rpm : 1070 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 900

Aneroid pressure h: 1200

Del.quantity : 277.0...279.0 1000 : (274.0...282.0) cm3 : 6.00 1000 : (9.00) Spread RATED SPEED 1st version Control Lever position degrees: 51...59 Testing: 1st rack travel in: 13.20 rpm : 980...990 Speed 2nd rack travel in: 4.00 Speed rpm : 1080...1110 4th rack travel in: 1250 Speed rpm : 0.00...1.00 LOW IDLE 1 Control lever position degrees: 17...25 Testing: Speed rpm : 100 Minimum rack trave: 7.50 rpm : 250

Rack travel in mm : 5.90...6.10 CONSTANT REGULATION

rpm : 250...570

Aneroid/Altitude Compensator Test

Speed

1st version Setting Speed rpm : 500 Pressure hPa : 1200 Rack travel mm : 14.20...14.30

Measurement 1/min : 500 Speed

1st pressure hPa : -Rack travel in m: 12.20...12.30 2nd pressure hPa : 850 Rack travel in m: 13.80...13.90
3rd pressure hPa : 610
Rack travel in m: 12.60...12.80

START CUT-OUT

1/min: 170 (190) Speed

BREAKAWAY

1st version

NO8

1mm rack travel less than

full load rack tr: 13.20 Speed rpm : 980...990 Speed

STARTING FUEL DELIVERY

rpm : 100 Speed Del.quantity cm3/: 130.0...170.0 Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 250 Rack travel in mm : 5.90...6.10

Remarks:

Delivery-valve spring pre-tension 3.2...3.4 mm. Permissible alteration of 3.0...3.5 mm

Because of flattening, set the spring preload on new delivery-valve holders to 2.9...3.1 mm.

Note remarks

Test sheet : MAC 12.0 a Edition : 10.02.89

Replaces : -

Test oil : ISO-4113

Combination no. : 0 402 746 836

Injection pump

Pump designation : PES6P120A720RS7157

EP type number : 0 412 726 814

Governor

Governor design. : RQV325...900PA848-12

K

Governer no. : 0 421 815 192

Customer—spec. information Customer : MACK

Engine : E7-400 4VH

1st version kW : 298.0 Rated speed : 1800

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 2 417 413 011

Overflow

quantity min. 1/h: 160...170

Test nozzle holder

assembly : 1 688 901 101

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter x Wall thickness

x Length mm : 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 17...19

Prestroke mm : 2.75...2.85

: (2.70...2.90)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Phasing

Tolerance $+ - \circ : 0.50 (0.75)$

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 900

Rack travel in mm : 15.50...15.60

Del.quantity cm3/: 27.2...27.4

100 s: (26.9...27.7)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm: 325.0
Rack travel in mm: 4.9...5.1

Del.quantity cm3/: 4.3...4.9 100 s: (4.1...5.1)

Spread cm3 : 0.8 100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 325

travel mm : 1.30...1.60

2nd speed rpm : 500

travel mm : 3.40...4.00

3rd speed rpm : 900

travel mm : 6.70...6.90

4th speed rpm : 1075 travel mm : 8.40...8.90

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm: 1120

Rack travel in mm : 7.00...13.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm: 900 Aneroid pressure h: 1200

NO9

272.0...274.0 1000 : (269.0...277.0) Del.quantity : 5.00 Spread cm3 1000 : (9.00) RATED SPEED 1st version Control lever position degrees: 56...64 Testina: 1st rack travel in: 14.50 Speed rpm : 940...950 2nd rack travel in: 4.00 Speed rpm: 1115...1145 4th rack travel in: 1250 Speed rom : 0.00...1.00LOW IDLE 1 Control lever position degrees: 10...18 Testing: Speed : 275 rpm Minimum rack trave: 6.40 Speed rpm : 325 Rack travel in mm : 4.90...5.10 CONSTANT REGULATION rpm : 325...500 Speed TORQUE CONTROL Dimension a mm Torque control curve - 1st version 1st speed rpm : 900 Rack travel in m: 15.50...15.60 2nd speed rpm : 625 Rack travel in m: 15.30...15.50 3rd speed rpm : 500 Rack travel in m: 0.00...14.60 Aneroid/Altitude Compensator Test 1st version Setting : 900 Speed rpm Pressure hPa : 1200 : 15.50...15.60 Rack travel mm Measurement 1/min: 900 Speed 1st pressure hPa : -Rack travel in m: 8.20...8.60 2nd pressure hPa : 225 Rack travel in m: 9.40...9.50 3rd pressure hPa : 770

Rack travel in m: 13.80...14.20 START CUT-OUT Speed 1/min : 280 (290) FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1200 Speed rpm : 625
Del.quantity cm3/ : 309.0...315.0
1000 s: (306.0...318.0) cm3 : 8.00 1000 s: (12.0) Spread Aneroid pressure h: -: 400 Speed rpm Del.quantity cm3/: 166.0...170.0 1000 s: (164.0...172.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 14.50 rpm : 940...950 Speed STARTING FUEL DELIVERY Speed mgn : 100 Del.quantity cm3/: 170.0...210.0 1000 s: (160.0...220.0) Rack travel in mm : 9.90...10.30 LOW IDLE rpm : 325 Speed Rack travel in mm : 4.90...5.10 Del.quantity cm3/: 43.0...49.0 1000 s: (41.0...51.0) cm3 : 8.00Spread

1000 s: (12.00)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : MAC 12,0 a1 Edition : 10.02.89 Replaces : ISO-4113 Test oil : 0 402 746 837 Combination no. Injection pump Pump designation : PES6P12OA72ORS7157 EP type number : 0 412 726 814 Governor : RQV325...900PA848-15 Governor design. : 0 421 815 193 Governer no. Customer-spec. information Customer : MACK Engine : E7-350 4VH : 261.0 1st version kW Rated speed : 1800 TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 2 417 413 011 Overflow quantity min. 1/h: 160...170 Test nozzle holder : 1 688 901 101 assembly **Opening** : 207...210 pressure, bar Orifice plate diameter mm : 0,6 : 1 680 750 008 Test Lines Outside diameter x Wall thickness x Length mm : 6.00X2.00X600 (A) Injection pump setting values

Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

: 2.75...2.85 : (2.70...2.90) Prestroke mm Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4 : 0-60-120-180-240-300 Phasing Phasina Tolerance + - ° : 0.50 (0.75) Time to cyl. no. : 1 BASIC SETTING 1st speed rpm: 900 Rack travel in mm : 14.00...14.10 Del.guantity cm3/: 22.8...23.0 100 s: (22.5...23.3) cm3 : 0.5Spread 100 s: (0.9) 2nd speed rpm : 325.0 Rack travel in mm: 5.3...5.5 Del.quantity cm3/: 4.1...4.7 100 s: (3.9...4.9) Spread cm3 : 0.8100 s: (1.2) (B) Setting of injection pump with governor GUIDE SLEEVE TRAVEL rpm : 325 : 1.30...1.60 1st speed travel mm : 500 2nd speed rpm : 3.40...4.00 travel mm : 900 3rd speed man : 6.70...6.90 travel mm : 1075 4th speed rpm : 8.40...8.90 travel mm GUIDE SLEEVE POSITION Control-lever position Degree: -1 Speed rpm : 1100 Rack travel in mm : 7.00...13.00 FULL LOAD DELIV. AT FULL LOAD STOP 1st version Speed rpm : 900 Aneroid pressure h: 900

Test pressure, bar: 17...19

Del.quantity : 228.0...230.0 1000 : (225.0...233.0) : 5.00 Spread cm3 1000 : (9,00) RATED SPEED 1st version Control Lever position degrees: 56...64 Testina: 1st rack travel in: 13.00 Speed rpm : 950...960 2nd rack travel in: 4.00 Speed rpm : 1100...1130 4th rack travel in: 1250 rpm : 0.00...1.00 Speed LOW IDLE 1 Control lever position degrees: 10...18 Testing: : 275 Speed rpm Minimum rack trave: 6.80 : 325 roa Rack travel in mm : 5.30...5.50 CONSTANT REGULATION rpm : 325...500 Speed TORQUE CONTROL Dimension a mm Torque control curve - 1st version 1st speed rpm : 900 Rack travel in m: 14.00...14.10 2nd speed rpm : 625 Rack travel in m: 13.80...14.00
3rd speed rpm : 500
Rack travel in m: 0.00...13.20 Aneroid/Altitude Compensator Test 1st version Setting Speed : 900 man Pressure hPa : 900 : 14.00...14.10 Rack travel mm Measurement 1/min: 900 Speed 1st pressure hPa : -Rack travel in m: 8.80...9.20 2nd pressure hPa : 225 Rack travel in m: 10.20...10.30 3rd pressure hPa : 545

Rack travel in m: 12.70...13.10 START CUT-OUT 1/min: 265 (275) Speed FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 900 Speed rpm Del.quantity cm3/: 260.0...266.0 1000 s: (257.0...269.0) cm3 : 8.00 Spread 1000 s: (12.0) Aneroid pressure h: -Speed rpm : 400 Del.quantity cm3/ : 166.0...170.0 1000 s: (164.0...172.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 13.00 rpm : 950...960 Speed STARTING FUEL DELIVERY rpm : 100 Speed Del.quantity cm3/: 170.0...210.0 1000 s: (160.0...220.0) Rack travel in mm : 10.40...10.80 LOW IDLE Speed rpm: 325
Rack travel in mm: 5.30...5.50
Del.quantity cm3/: 41.0...47.0 1000 s: (39.0...49.0) Spread cm3 : 8.00 1000 s: (12.00) Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks : MAC 12,0 a2 Test sheet Edition : 10.02.89 Replaces Test oil : ISO-4113 : 0 402 746 838 Combination no. Injection pump : PES6P120A720RS7157 Pump designation : 0 412 726 814 EP type number Governor : RQV325...875PA848-14 Governor design. : 0 421 815 194 Governer no. Customer-spec. information Customer : MACK : EM7-250L 4VH Engine : 187.0 1st version kW : 1950 Rated speed TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 2 417 413 011 Overflow quantity min. 1/h: 160...170 Test nozzle holder : 1 688 901 101 assembly Opening pressure, bar : 207...210 Orifice plate diameter mm : 0,6 Test lines : 1 680 750 008 Outside diameter x Wall thickness x Length mm : 6.00X2.00X600 (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

: 0-60-120-180-240-300 Phasing Phasing Tolerance + - 0 : 0.50 (0.75) Time to cyl. no. : 1 BASIC SETTING 1st speed rpm: 875 Rack travel in mm : 10.30...10.40 Del.quantity cm3/: 17.3...17.5 100 s: (17.0...17.8) cm3 : 0.5Spread 100 s: (0.9) 2nd speed rpm : 325.0 Rack travel in mm : 4.7...4.9 Del.quantity cm3/: 4.1...4.7 100 s: (3.9...4.9) Spread cm3 : 0.8100 s: (1.2) (B) Setting of injection pump with governor GUIDE SLEEVE TRAVEL 1st speed rpm : 1.30...1.60 travel mm 2nd speed 500 rpm 3.40...4.00 travel mm 900 3rd speed rpm : 6.70...6.90 travel mm : 1075 4th speed rpm : 8.40...8.90 travel mm GUIDE SLEEVE POSITION Control-lever position Degree: -1 Speed rpm: 1120 Rack travel in mm: 6.00...12.00 FULL LOAD DELIV. AT FULL LOAD STOP 1st version Speed rpm : 875 Aneroid pressure h: 900

Test pressure, bar: 17...19

Rack travel in mm : 9.00...12.00

: 2.75...2.85 : (2.70...2.90)

: 1-5-3-6-2-4

Prestroke mm

Firing order

N13

per values

BEGINNING OF DELIVERY

: 5.00 Spread cm3 1000 : (9.00) RATED SPEED 1st version Control Lever position degrees: 52...60 Testina: 1st rack travel in: 9.30 rpm : 915...925 Speed 2nd rack travel in: 4.00 Speed rpm : 1020...1050 4th rack travel in: 1200 Speed rpm : 0.00...1.00 LOW IDLE 1 Control Lever position degrees: 10...18 Testina: : 275 Speed LDW Minimum rack trave: 6.20 rom : 325 Rack travel in mm : 4.70...4.90 CONSTANT REGULATION rpm : 325...500 Speed TORQUE CONTROL Dimension a mm Torque control curve - 1st version 1st speed rpm : 875 Rack travel in m: 10.30...10.40 2nd speed rpm : 510 Rack travel in m: 11.90...12.10 3rd speed rpm : 450 Rack travel in m: 0.00...11.80 Aneroid/Altitude Compensator Test 1st version Settina Speed : 510 rpm hPa : 900 Pressure Rack travel mm : 11.90...12.10 Measurement 1/min: 510 Speed 1st pressure hPa : -Rack travel in m: 8.30...8.70 2nd pressure hPa : 205

Rack travel in m: 9.30...9.40

3rd pressure hPa : 400

Rack travel in m: 11.00...11.40 START CUT-OUT 1/min : 265 (275) Speed FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 900 Speed rpm Del.quantity cm3/: 244.0...250.0 1000 s: (241.0...253.0) cm3 : 8.90 Spread 1000 s: (12.0) Aneroid pressure h: -Speed rpm : 400 Del.quantity cm3/ : 168.0...172.0 1000 s: (166.0...174.0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 9.30 rpm : 915...925 Speed STARTING FUEL DELIVERY rpm : 100 Speed Del.quantity cm3/: 170.0...210.0 1000 s: (160.0...220.0) Rack travel in mm : 9.80...10.20 LOW IDLE Speed rpm : 325 Rack travel in mm : 4.70...4.90 Del.quantity cm3/: 41.0...47.0 1000 s: (39.0...49.0) Spread cm3 : 8.00 1000 s: (12.00) Remarks:

Note remarks

: MAC 12,0 b : 10.02.89 Test sheet Edition

Replaces

: ISO-4113 Test oil

: 0 402 746 839 Combination no.

Injection pump

Pump designation : PES6P120A720RS7148

EP type number : 0 412 726 810

Governor

Governor design. : RQV325...875PA848-19

: 0 421 815 199 Governer no.

Customer-spec. information Customer : MACK

: EM7 300L 4VH Engine

: 224.0 1st version kW : 1950 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 2 417 413 011

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 101 assembly

Openina

pressure, bar : 207...210

Orifice plate

diameter mm : 0,6

: 1 680 750 008 Test lines

Outside diameter x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 17...19

: 2.75...2.85 : (2.70...2.90) Prestroke mm

Rack travel in mm : 6.00...8.00 Firing order : 1-5-3-6-2-4

: 0-60-120-180-240-300 Phasina

: 0.50 (0.75) Tolerance + - 0

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 875

Rack travel in mm : 11.50...11.60

Del.guantity cm3/: 21.0,...21.2

100 s: (20.7...21.5)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 325.0 2nd speed Rack travel in mm: 4.5...4.7 Del.quantity cm3/: 4.1...4.7

100 s: (3.9...4.9)

cm3 : 0.8Spread 100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 325

: 1.20...1.40 travel mm rpm : 450 2nd speed

: 2.50...2.80 travel mm

3rd speed : 600 rpm

: 4.10...4.30 travel mm 4th speed rom:

: 875 : 7.30...7.50 travel mm

: 1000 5th speed rpm

: 8.70...9.00 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1030 Speed

Rack travel in mm : 6.00...12.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 875

Aneroid pressure h: 1200 Del.quantity : 210.0...215.0) : 5.00 cm3 Spread 1000 : (9.00) RATED SPEED 1st version Control Lever position degrees: 57...65 Testina: 1st rack travel in: 10.50 rpm : 915...925 Speed 2nd rack travel in: 4.00 Speed rpm : 1000...1030 4th rack travel in: 1150 rom : 0.00...1.00Speed LOW IDLE 1 Control Lever position degrees: 8...16 Testina: : 275 Speed rpm Minimum rack trave: 6.00 : 325 rpm Rack travel in mm : 4.50...4.70 CONSTANT REGULATION rpm : 325...520 Speed TORQUE CONTROL Dimension a mm Torque control curve - 1st version : 875 1st speed rpm Rack travel in m: 11.50...11.60 : 510 2nd speed rpm Rack travel in m: 16.00...16.20 3rd speed rpm : 800 Rack travel in m: 12.00...12.20 4th speed rpm : 600 Rack travel in m: 15.10...15.30 rpm : 450 5th speed Rack travel in m: 0.00...15.70 Aneroid/Altitude Compensator Test 1st version Setting Speed rpm : 510 hPa : 1200 Pressure : 16.00...16.20 Rack travel mm Measurement 1/min: 510 Speed

1st pressure hPa : -Rack travel in m: 8.70...9.10 2nd pressure hPa : 325 Rack travel in m: 10.60...10.70 3rd pressure hPa : 815 Rack travel in m: 14.30...14.70 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1200 Speed : 510 rom Del.quantity cm3/: 294.0...300.0 1000 s: (291.0...303.0) cm3 : 8.00 Spread 1000 s: (12.0) Aneroid pressure h: -Speed rpm : 400 Del.quantity cm3/: 166.0...170.0 1000 s: (164.0...172.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 10.50 rpm : 915...925 Speed STARTING FUEL DELIVERY

: 100 Speed man Del.quantity cm3/: 165.0...185.0

1000 s: (155.0...195.0)

Rack travel in mm : 8.70...9.10

LOW IDLE

Speed rpm : 325 Rack travel in mm : 4.50...4.70 Del.quantity cm3/: 41.0...47.0 1000 s: (39.0...49.0) Spread cm3 : 8.00

1000 s: (12.00)

Remarks:

Delivery-valve spring pre-tension 3.2...3.4 mm.

Permissible alteration of 3.0...3.5 mm

Note remarks

: MAC 11,1a12 : 10.02.89 Test sheet Edition

Replaces

: ISO-4113 Test oil

: 0 402 746 840 Combination no.

Injection pump

Pump designation : PES6P120A720RS7135

EP type number : 0 412 726 807

Governor

: RQV325...875PA848-18 Governor design.

: 0 421 815 198 Governer no.

Customer-spec. information Customer : MACK

: EMC6 250L 4VH Engine

1st version kW : 187.0 Rated speed : 1950

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 2 417 413 011

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 101 assembly

Openina

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 17...19

Prestroke mm : 2.75...2.85 : (2.70...2.90) Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4

Phasing

: 0-60-120-180-240-300

Tolerance + - 0

: 0.50 (0.75)

Time to cyl. no.

BASIC SETTING

1st speed rpm: 875

Rack travel in mm : 11.20...11.30

Del.quantity cm3/: 17.3...17.5

100 s: (17.0...17.8)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 325.0 2nd speed

Rack travel in mm: 4.5...4.7 Del.quantity cm3/: 3.9...4.5

100 s: (3.7...4.7)

cm3 : 0.8 Spread

100 s: (1.2)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 325

: 1.20...1.40 travel mm

rpm : 450 2nd speed

: 2.80...3.20 travel mm

rpm : 850 3rd speed

: 6.20...6.40 travel mm

: 1000 4th speed rpm

travel mm : 7.70...7.90

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1100

Rack travel in mm : 7.00...13.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rom : 875 Aneroid pressure h: 1200

: 5.00 cm3 Spread 1000 : (9.00) RATED SPEED 1st version Control lever position degrees: 54...62 Testing: 1st rack travel in: 10.20 rpm : 915...925 Speed 2nd rack travel in: 4.00 Speed rpm : 1010...1040 4th rack travel in: 1100 Speed rpm : 0.00...1.00 LOW IDLE 1 Control lever position degrees: 9...17 Testing: Speed : 275 rpm Minimum rack trave: 6.00 Speed rpm : 325 Rack travel in mm : 4.50...4.70 CONSTANT REGULATION Speed rpm : 325...520 TORQUE CONTROL Dimension a mm Torque control curve - 1st version 1st speed rpm : 875 Rack travel in m: 11.20...11.30
2nd speed rpm : 510
Rack travel in m: 13.10...13.30
3rd speed rpm : 700 Rack travel in m: 12.00...12.20 4th speed rpm : 450 Rack travel in m: 0.00...13.10 Aneroid/Altitude Compensator Test 1st version Setting Speed : 510 rpm Pressure hPa : 1200 : 13.10...13.30 Rack travel mm Measurement 1/min: 510 Speed 1st pressure hPa : -Rack travel in m: 9.10...9.50 2nd pressure hPa : 215

Rack travel in m: 10.30...10.40 3rd pressure hPa : 435 Rack travel in m: 12.20...12.60 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1200 rpm Del.quantity cm3/: 239.0...245.0 1000 s: (236.0...248.0) cm3 : 8.00 Spread 1000 s: (12.0) Aneroid pressure h: -Speed rpm : 400 Del.quantity cm3/ : 146.0...150.0 1000 s: (144.0...152.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 10.20 rpm : 915...925 Speed

STARTING FUEL DELIVERY

Speed : 100 rpm Del.quantity cm3/: 160.0...200.0 1000 s: (150.0...210.0) Rack travel in mm : 9.10...9.50

LOW IDLE

Speed rpm : 325
Rack travel in mm : 4.50...4.70
Del.quantity cm3/ : 39.0...45.0
1000 s: (37.0...47.0) : 8.00 Spread cm3 1000 s: (12.00)

Remarks:

Delivery-valve spring pre-tension 3.2...3.4 mm. Permissible alteration of 3.0...3.5 mm

Note remarks

Test sheet Edition : MB 12,0 a2 : 03.03.89 Replaces : 9.9.88

Test oil : ISO-4113

Combination no. : 0 402 746 841

Injection pump

Pump designation : PES6P120A720LS7114-2

: 0 412 726 815 EP type number

Governor

Governor design. : RQ300/1050PA774-3

Governer no. : 0 421 801 451

Customer-spec. information

Customer : DAIMLER-BENZ

Engine : 0M447 LA

: 265.0 1st version kW : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 019 assembly

Openina

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test Lines : 1 680 750 067

Outside diameter x Wall thickness

x Length mm : 6.00X1.50X1000

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant.

per values ___

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.20...5.30 : (5.15...5.35) Prestroke mm

Rack travel in mm : 9.00...12.00

Firing order : 6-2-4-1-5-3

Phasing : 0-60-120-180-240-300

Tolerance + - 0 : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm: 600

Rack travel in mm : 14.00...14.20

Del.quantity cm3/: 22.9...23.1

100 s: (22.6...23.4)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 300.02nd speed

Rack travel in mm : 5.8...6.2 Del.quantity cm3/ : 1.4...2.0 100 s: (1.1...2.3)

Spread cm3 : 0.8

100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 1500

Del.quantity : 229.0...231.0 1000 : (226.0...234.0)

: 5.00 Spread cm3

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed : 600 rpm

Rack travel in mm : 20.0

Testina:

1st rack travel in: 13.00

Speed rpm : 1095...1110

2nd rack travel in: 4.00

: 1150...1180 Speed rom

4th rack travel in: 1300

Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring

: 300 Speed man Rack travel in mm: 6.0 : 300 rom

Rack travel in mm : 5.80...6.20

Rack travel in mm : 2.00

: 360...400 Speed rpm

TORQUE CONTROL

Dimension a mm

2nd speed

nd speed rpm : 1050 Rack travel in m: 14.00...14.20

: 700 3rd speed rpm

Rack travel in m: 14.70...14.90

Aneroid/Altitude Compensator Test

1st version

Settina

: 600 Speed rom hPa : 700 Pressure

: 14.00...14.20 Rack travel mm

Measurement

1/min: 600 Speed

1st pressure hPa : 300

Rack travel in m: 11.80...12.00

2nd pressure hPa : 500

Rack travel in m: 13.40...13.60

3rd pressure hPa : 1100

Rack travel in m: 14.20...14.40

4th pressure hPa : 1500

Rack travel in m: 14.70...14.90

5th pressure hPa

Rack travel in m: 10.40...10.70

START CUT-OUT

1/min: 220 (240) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1500 : 1050 Speed rpm

Del.quantity cm3/: 234.0...238.0 1000 s: (231.0...241.0)

Spread cm3 : 8.00 1000 s: (12.0)

Aneroid pressure h: 1500

Speed rpm : 700
Del.quantity cm3/: 246.0...249.0
1000 s: (243.0...252.0)

cm3 : 8.00 1000 s: (12.0) Spread

Aneroid pressure h: -: 500 Speed rpm

Del.quantity cm3/: 146.0...148.0

1000 s: (143.0...151.0)

Spread cm3 : 8.00

1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.00

rpm : 1095...1110 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 240.0...260.0 1000 s: (236.0...264.0)

Remarks:

* Increase in control-rod travel with respect to setting at least 0.1 mm

Note remarks

: MAC 11,1 e : 10.02.89 Test sheet Edition

Replaces

Test oil : ISO-4113

Combination no. : 0 402 746 842

Injection pump

Pump designation: PES6P120A720RS7164

EP type number : 0 412 726 816

Governor

: RQV325...875PA848-17 Governor design.

: 0 421 815 200 Governer no.

Customer-spec. information Customer : MACK

: EMC6 300L 4VH Engine

: 200.0 1st version kW : 1950 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 2 417 413 011

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 101 assembly

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values __

BEGINNING OF DELIVERY

Test pressure, bar: 17...19

Prestroke mm : 2.75...2.85 : (2.70...2.90) Rack travel in mm : 11.00...13.00

: 1-5-3-6-2-4 Firing order

Phasing : 0-60-120-180-240-300

Tolerance + - 0 : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 875

Rack travel in mm : 14.60...14.70

Del.guantity cm3/: 21.9...22.1

100 s: (21.6...22.4)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 325.0 2nd speed Rack travel in mm: 4.3...4.5 Del.quantity cm3/: 3.9...4.5 100 s: (3.7...4.7)

cm3 : 0.8 Spread 100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 325

: 1.20...1.40 travel mm

rpm : 450 2nd speed travel mm : 3.00...3.40

3rd speed : 850 rpm

: 5.90...6.10 travel mm rpm : 10004th speed

: 7.40...7.70 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1120

Rack travel in mm : 7.00...13.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 875 Aneroid pressure h: 1200

Del.quantity : 219.0...221.0 1000 : (216.0...224.0) : 5.00 cm3 Spread 1000 : (9.00) RATED SPEED 1st version Control lever position degrees: 54...62 Testing: 1st rack travel in: 13.60 rpm : 915...925 Speed 2nd rack travel in: 4.00 rpm : 1060...1090 Speed 4th rack travel in: 1160 Speed rpm : 0.00...1.00LOW IDLE 1 Control lever position degrees: 10...18 Testing: Speed rpm Minimum rack trave: 5.80 Speed rpm : 325 Rack travel in mm : 4.30...4.50 CONSTANT REGULATION rpm : 325...520 Speed TORQUE CONTROL Dimension a mm Torque control curve - 1st version 1st speed rpm : 875 Rack travel in m: 14.60...14.70

2nd speed rpm : 510

Rack travel in m: 16.70...16.90

3rd speed rpm : 700

Rack travel in m: 15.30...15.50 rpm : 600 4th speed Rack travel in m: 16.00...16.20 5th speed rpm : 420 Rack travel in m: 0.00...16.80 Aneroid/Altitude Compensator Test 1st version Setting Speed : 510 rpm hPa : 1200 Pressure : 16.70...16.90 Rack travel mm Measurement 1/min: 510 Speed 1st pressure hPa : -

N22

Rack travel in m: 10.40...10.80 2nd pressure hPa : 375 Rack travel in m: 12.10...12.20 3rd pressure hPa : 735 Rack travel in m: 15.10...15.50 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1200 Speed rpm : 510
Del.quantity cm3/ : 304.0...310.0
1000 s: (301.0...313.0)
Spread cm3 : 8.00 1000 s: (12.0) Aneroid pressure h: rpm : 400 Speed Del.quantity cm3/: 156.0...160.0 1000 s: (154.0...162.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 13.60 rpm : 915...925 STARTING FUEL DELIVERY

LOW IDLE

Speed rpm : 325
Rack travel in mm : 4.30...4.50
Del.quantity cm3/: 39.0...45.0
1000 s: (37.0...47.0)
Spread cm3 : 8.00
1000 s: (12.00)

Remarks:

Delivery-valve spring pre-tension 3.2...3.4 mm. Permissible alteration of 3.0...3.5 mm

Note remarks

Test sheet : PER 12,2 e Edition : 27.10.88

Replaces

: ISO-4113 Test oil

: 0 402 746 844 Combination no.

Injection pump

Pump designation : PES6P120A720RS7162

EP type number : 0 412 726 819

Governor

Governor design. : RQ750PA836-1 Governer no. : 0 421 801 454

Customer-spec. information : PERKINS Customer

: 2006 TAG Engine

1st version kW : 280.0 Rated speed : 1500

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter x Wall thickness

x Length mm : 6.00x1.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 4.50...4.60 Prestroke mm

: (4.45...4.65)

Rack travel in mm : 9.00...12.00 Firing order : 1-4-2-6-3-5

: 0-60-120-180-240-300 Phasing

Tolerance + - 0 : 0.50 (0.75)

BASIC SETTING

rom : 700 1st speed

Rack travel in mm : 13.00...13.10

Del.quantity cm3/: 37.9...38.1

100 s: (37.6...38.4)

cm3 : 0.5 Spread

100 s: (0.9)

2nd speed rpm : 300.0 Rack travel in mm : 5.5...5.7 Del.quantity cm3/ : 3.8...4.4 100 s: (3.5...4.7)

Spread cm3 : 0.8100 s: (1.2)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 700 Speed

: 379.0...381.0 Del.quantity 1000 : (376.0...384.0)

: 5.00 cm3 Spread

: (9.00) 1000

RATED SPEED

1st version

Testing:

1st rack travel in: 12.00

rpm : 750...755 Speed 2nd rack travel in: 4.00

rpm : 785...795 Speed

4th rack travel in: 820

rpm : 0.00...1.00 Speed

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.00

Speed rpm : 750...755

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 300.0...340.0 1000 s: (296.0...344.0)

:

Remarks:

APPLICATION

Generator

Note remarks

Test sheet : MAC 16,0 a Edition : 17.02.89

Replaces

Test oil : ISO-4113

Combination no. : 0 402 748 802

Injection pump

Pump designation : PES8P120A920/4LS7159

EP type number : 0 412 728 801

Governor

Governor design. : RQV325..1050PA848-21

: 0 421 815 201 Governer no.

Customer-spec. information Customer

: EE9 502 Engine

1st version : 368.0 kW : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 2 417 413 011

Overflow

quantity min. 1/h: 160...170

Test nozzle holder

: 1 688 901 101 assembly

Openina

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter

x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 22...24

: 3.55...3.65 Prestroke mm

(3.50...3.70)

Rack travel in mm : 9.00...12.00 : 1-2-7-8-4-5-6-3 Firing order

Phasing : 0-45-90-135-180-225-

270-315

Tolerance + - 0 : 0.50 (0.75)

Time to cyl. no.

BASIC SETTING

1st speed rpm: 630

Rack travel in mm : 12.10...12.20

Del.quantity cm3/: 21.5...21.7

100 s: (21.2...22.0)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 325.0 2nd speed

Rack travel in mm : 4.8...5.0 Del.quantity cm3/: 4.0...4.6

100 s: (3.8...4.8)

Spread cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

1st speed

rpm : 325 : 1.30...1.60 travel mm

: 450 2nd speed rpm

: 2.30...2.70 travel mm : 800 3rd speed

rpm : 4.40...4.80 travel mm

: 1050 4th speed rpm

: 6.90...7.10 travel mm

1200 5th speed rpm

: 8.90...9.20 travel mm

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

rpm : 1220

Rack travel in mm : 7.00...13.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version Speed rpm : 630 Aneroid pressure h: 1200 Del.quantity : 213.0...220.0) Spread cm3 : 5.00 1000 : (9.00) RATED SPEED 1st version Control lever position degrees: 57...65 Testing: 1st rack travel in: 12.40 rpm : 1095...1105 2nd rack travel in: 4.00 rpm : 1190...1220 Speed 4th rack travel in: 1300 rpm : 0.00...1.00Speed LOW IDLE 1 Control lever position degrees: 9...17 Testing: Speed rom Minimum rack trave: 6.30 rpm : 325 Rack travel in mm : 4.80...5.00 CONSTANT REGULATION rpm : 325...600 Speed TORQUE CONTROL Dimension a mm Torque control curve - 1st version 1st speed rpm : 630 Rack travel in m: 12.10...12.20 2nd speed rpm : 1050
Rack travel in m: 13.40...13.60
3rd speed rpm : 500
Rack travel in m: 0.00...11.60 Aneroid/Altitude Compensator Test 1st version Setting Speed rpm : 1050 hPa : 1200 Pressure : 13.40...13.60 Rack travel mm Measurement 1/min: 1050 Speed 1st pressure hPa : -Rack travel in m: 8.70...9.10

2nd pressure hPa : 345 Rack travel in m: 10.20...10.30 3rd pressure hPa : 725 Rack travel in m: 12.30...12.70 START CUT-OUT Speed 1/min: 280 (290) FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1200 : 1050 Speed rom Del.quantity cm3/: 206.0...212.0 1000 s: (203.0...215.0) cm3 : 10.00 Spread 1000 s: (14.0) Aneroid pressure h: -Speed rpm : 400 Del.quantity cm3/ : 161.0...165.0 1000 s: (159.0...167.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 12.40 rpm : 1095...1105 Speed STARTING FUEL DELIVERY rpm : 100 Speed Del.quantity cm3/: 145.0...185.0 1000 s: (135.0...195.0) Rack travel in mm : 9.60...10.00 LOW IDLE Speed rpm : 325 Rack travel in mm : 4.80...5.00 Del.quantity cm3/: 40.0...46.0 1000 s: (38.0...48.0) cm3 : 8.00Spread 1000 s: (12.00) Remarks:

Note remarks

Test sheet Edition : MB 10,0 p : 03.03.89

Replaces

Test oil : ISO-4113

Combination no. : 0 402 775 800

Injection pump

Pump designation : PES5P120A720LS7171

EP type number : 0 412 725 804

Governor

Governor design. : RSV350..1050P0A529-4

Governer no. : 0 421 833 319

Customer-spec. information

Customer : DAIMLER-BENZ

Engine : 0M449 A

: 184.0 1st version kW : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 019 assembly

Openina

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter x Wall thickness

x Length mm : 6.00X1.50X1000

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30 : (5.15...5.35) Rack travel in mm : 20.00...21.00 Firing order : 1- 3- 5- 4- 2

Phasing : 0-72-144-216-288

Tolerance + - 0 : 0.50 (0.75)

Time to cyl. no. : 5

BASIC SETTING

1st speed rpm : 1030

Rack travel in mm : 14.40...14.50

Del.guantity cm3/: 20.9...21.1

100 s: (20.6...21.4)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 350.0 2nd speed

Rack travel in mm: 4.5...4.8 Del.quantity cm3/: 1.4...2.0 100 s: (1.1...2.3) Spread cm3: 0.8

100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position Degree: -3

rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 3.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1030Aneroid pressure h: 1200

: 209.0...211.0 Del.quantity

1000 : (206.0...214.0)

cm3 : 5.00 Spread

1000 : (9.00)

RATED SPEED

1st version

Control lever position degrees: 50...58 Testing: 1st rack travel in: 13.40 rpm : 1080...1090 Speed 2nd rack travel in: 4.00 Speed rpm : 1170...1200 4th rack travel in: 1300 rpm : 0.30...1.40 Speed LOW IDLE 1 Control lever position degrees: 24...32 Setting point w/out bumper spring rpm : 350 Rack travel in mm: 4.6 : 350 Speed rpm Rack travel in mm : 4.50...4.80 SET IDLE AUXILIARY SPRING Rack travel in mm : 2.00 TORQUE CONTROL Torque control curve – 1st version rpm : 1030 1st speed Rack travel in m: 14.40...14.50 rpm : 850 2nd speed Rack travel in m: 14.70...14.90 3rd speed rpm : 950 Rack travel in m: 14.60...14.80 Aneroid/Altitude Compensator Test 1st version Setting Speed : 600 man Pressure hPa : 600 : 14.00...14.20 Rack travel mm Measurement 1/min: 600 Speed 1st pressure hPa : 250 Rack travel in m: 12.20...12.40 2nd pressure hPa : 350 Rack travel in m: 13.30...13.50 3rd pressure hPa : 800 Rack travel in m: 14.20...14.40 4th pressure hPa : 1200 Rack travel in m: 14.70...14.90 5th pressure hPa : -Rack travel in m: 11.30...11.70

Aneroid pressure h: 660 : 600 Speed rpm Del.quantity cm3/: 196.0...199.0 1000 s: (193.0...202.0) cm3 : 8.00Spread 1000 s: (12.) Aneroid pressure h: 1200 Speed rpm Del.quantity cm3/: 221.0...223.0 1000 s: (218.0...226.0) cm3 : 8.00 1000 s: (12.00 Spread : 500 Speed rpm Del.quantity cm3/: 146.0...148.0 1000 s: (143.0...151.0) Spread cm3 : 8.001000 s: (12.00

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 13.40 Speed rpm : 1080...1090

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 220.0...240.0 1000 s: (216.0...244.0)

Remarks:

* Increase in control-rod travel with respect to setting at least 0.1 mm

1st version

FUEL DELIVERY CHARACTERISTICS